12/9/85 U8710-1A

Center for Business and Economic Research College of Business Administration The University of Tennessee, Knoxville

Summer/Fall 1985

Survey of Business

Issues in Tennessee:

Business Location Determinants

Industrialization Assistance In West Tennessee

Taxes and State Borders

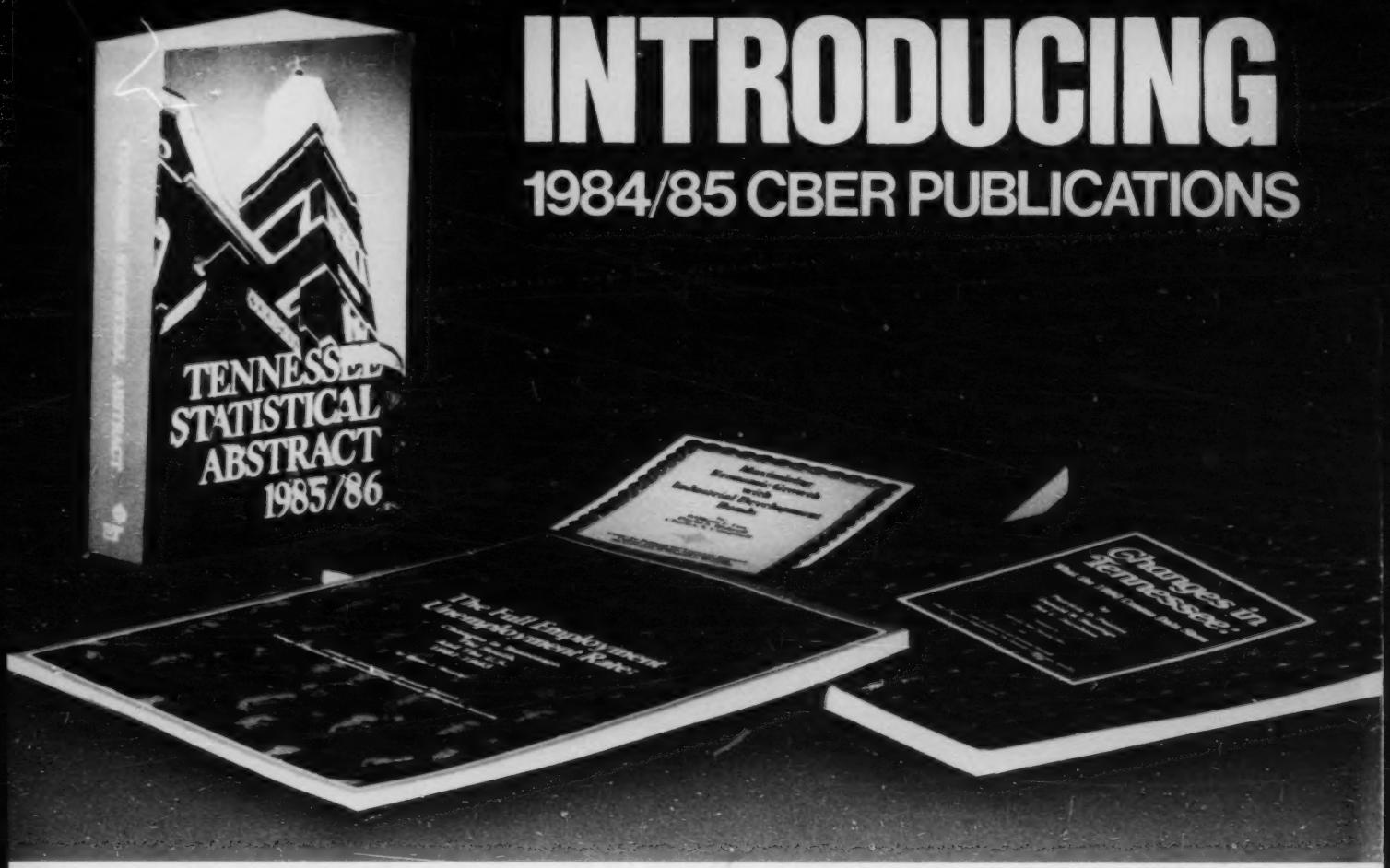
The Full Employment Unemployment Rate

Growth Through Industrial Development Bonds

Tennessee Population Projections

INTRODUCING

1984/85 CBER PUBLICATIONS



1. TENNESSEE STATISTICAL ABSTRACT, a 760-page standard annual reference for economic and social data in Tennessee, presents the most current historical information available for the state, MSAs, counties, cities and towns. $25.00
2. MAXIMIZING ECONOMIC GROWTH WITH INDUSTRIAL DEVELOPMENT BONDS provides a philosophy and a uniform set of issuance guidelines that would allow state governments to achieve maximum economic benefits for the state from a limited number of IDBs. $6.00
3. CHANGES IN TENNESSEE: WHAT THE 1980 CENSUS SHOWS, highlights the major changes in the population of the state as a whole as well as the 95 counties. $7.50
4. THE FULL EMPLOYMENT UNEMPLOYMENT RATE: CHANGES IN TENNESSEE, THE SOUTH, AND THE U.S., 1961-1983 discusses Tennessee's experience relative to other states regarding that unemployment rate at which labor demand and labor supply are approximately in balance. $6.00
5. THE EFFECT OF DIFFERENTIAL TAX RATES ON CONSUMPTION BEHAVIOR AND GOVERNMENT REVENUES documents how differential tax structures affect economic activity along the Tennessee state borders. $6.00
6. BUSINESS LOCATION DETERMINANTS IN TENNESSEE, based on an extensive survey of manufacturers who recently located new facilities or expanded existing ones within the state, highlights the factors firms weigh most heavily in their decision-making process. $7.50

CBER Publications/TEFS

To order the above publications or for more information on the Tennessee Economic Forecasting Service (see inside back cover), check the appropriate boxes. (Prices include shipping and handling.)

☐ Yes, I would like to order _____copies of the 1985/86 TSA @ $25.00 per copy.

☐ Yes, I would like to order copies of the monograph(s) circled 1 2 3 4 5 6 @ $_____

☐ Yes, I would like to know more about TEFS--the business cycle and trend forecasting services for Tennessee.

Name _____ ☐ Bill me.

Address _____ ☐ Check Enclosed.

_____

Mail to: Center for Business and Economic Research, 100 Glocker Building, College of Business Administration, The University of Tennessee, Knoxville, TN 37996-4170 Telephone (615) 974-5441.

The University of Tennessee
Summer/Fall 1985
Volume 21 Number 1

Survey OF BUSINESS

PERSONNEL

C. Warren Neel, Dean
College of Business Administration

CBER APPOINTMENTS

David A. Hake *Director and Editor,* **Survey of Business**

William F. Fox, *Associate Director and Research Associate Professor*

John W. Mayo, *Research Assistant Professor*

LeRoy T. Hansen, *Visiting Research Assistant Professor*

Maxwell J. Cornelius, *Manager, Computer Resources Group*

George A. Mundrake, *Coordinator, Instructional Support*

Patricia A. Price, *Sr. Research Associate*

Betty B. Vickers, *Research Associate*

Susan E. Bott, *Research Assistant*

Deborah W. Crowder, *Office Supervisor Computer Resources*

Carol E. Schmidhammer, *Research Associate*

Jennifer F. Langston, *Sr. Secretary*

Donna Kemper, *Clerk/Typist*

Laura McCollough, *Clerk/Typist*

Sandra L. Turner, *Data Specialist*

Graduate Research Assistants

Byron C. Goins
Il Soo Jun
Lillian Mason
Melissa A. Wood

Consultant

Kenneth E. Quindry
Research Professor Emeritus

Art Director

Richard J. LeFevre, *Associate Professor of Art*

PUBLICATIONS GROUP

Jeanne P. McDonald, *Managing Editor*

Mark A. Ingebretsen, *Assistant Managing Editor*

Rebecca Kelly, *Editorial Assistant*

Patricia A. Hunley, *Word Processing Group Supervisor*

Patricia D. Flynn, *Word Processing Specialist*

Julia C. Elkins, *Word Processing Specialist*

Joan M. Strong, *Proofreader*

Donna S. Hundley, *Technical Art*

Jennifer Jordan, *Technical Art*

CONTENTS

Why Business Likes Tennessee 3

by David A. Hake, Donald R. Ploch, and William F. Fox. *A survey of 325 manufacturers shows that the state's workforce and its pro-business attitude are reasons why Tennessee is an emerging spot for new business location.*

Industrial Assistance in West Tennessee 9

by Bob Figgins and Parker D. Cashdollar. *The authors reveal which agencies smaller communities are most likely to turn to in their efforts to attract new industry.*

The Right Way to Use Industrial Development Bonds 10

by William F. Fox, David S. Kidwell, and Charles A. Campbell. *The authors outline a method of allocating IDBs that maximizes their ability to stimulate economic growth.*

Taxes and State Borders 16

by William F. Fox, Donald R. Ploch, Patricia A. Price, and Susan E. Bott. *After studying sales patterns in Chattanooga, Clarksville, the Tri-Cities, and elsewhere, the authors found that each sales tax increase costs the state's border communities lost sales, tax revenues, and jobs.*

Tennessee's Full Employment Unemployment Rate 23

by Kevin R. Murphy. *Tennessee's full employment unemployment rate happens to be higher than that found in most other states. In this article, the author explains what this difference means to policy makers.*

Highlights on Tennessee's Projected Population 29

by Donald W. Hastings and William F. Clevenger. *The state's highest growth areas in the years ahead will be counties contiguous to Metropolitan Statistical Areas. If present trends continue, there will be roughly 5.5 million Tennesseans by the year 2000.*

THE AUTHORS

David A. Hake *is Director of the Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville.*

Donald R. Ploch *is Professor of Sociology at The University of Tennessee, Knoxville.*

William F. Fox *is Associate Director of the Center for Business and Economic Research and Associate Professor of Economics, College of Business Administration, The University of Tennessee, Knoxville.*

Bob Figgins *is Chairman of the Department of Economics and Finance at The University of Tennessee, Martin.*

Parker Cashdollar *is Associate Professor of Economics at The University of Tennessee, Martin.*

David S. Kidwell *is the Keehn Berry Professor of Banking, A.B. Freeman School of Business, Tulane University, New Orleans.*

Charles A. Campbell *is Assistant Professor of Economics at Mississippi State University, Starkville.*

Patricia A. Price *is a Senior Research Associate at the Center for Business and Economic Research.*

Susan E. Bott *is a Research Assistant at the Center for Business and Economic Research.*

Kevin R. Murphy *is Associate Professor of Economics at Oakland University, Rochester, Michigan.*

William F. Clevenger *is a graduate research assistant in Sociology at The University of Tennessee, Knoxville.*

Donald W. Hastings *is a Professor of Sociology at The University of Tennessee, Knoxville.*

SURVEY OF BUSINESS, The University of Tennessee, Knoxville (ISSN 0099-0973), is published quarterly by the College of Business Administration, Center for Business and Economic Research, The University of Tennessee, Knoxville to inform the Tennessee business professional about current economic and socio-economic trends and techniques developing in the state. Authorization No. EOI-1490-001-83. Back issues and article reprints may be ordered at $1.25 per copy. Address correspondence to Editor, Center for Business and Economic Research, Suite 100, Glocker Hall, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170. Second class postage paid at Knoxville and Nashville, Tennessee. Requests for inclusion on mailing list and address corrections should be sent to the same address. The publisher of the **Survey** *assumes no responsibility for statements made by writers. Articles reflect the opinions of the authors. Postmaster: Send Change of Address form 3579 to: Center for Business and Economic Research, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170.*

CONSULTING EDITOR'S COMMENTS

During the past year the Center for Business and Economic Research has been involved in a number of investigations related to the economic health of our state and region. The scope of this research encompasses everything from the reasons companies decide to locate manufacturing facilities in Tennessee to the effect that Tennessee's sales taxes have on retail activity in the state's border communities.

Though these studies are contracted for by specific state, federal, or private agencies, the information gleaned from the work is of interest to a broader constituency – in particular, the state's government and business leaders.

Because of this interest, the Fall issue of **Survey of Business** focuses itself on the results of recent research projects conducted by the Center and its academic colleagues. The results are presented here in condensed form for the lay business reader.

Our issue begins with a topic that has made national headlines recently: why businesses choose Tennessee as a site for new manufacturing facilities. The study, performed by David A. Hake, Donald R. Ploch, and William F. Fox, took place at the time Nissan was building its new truck manufacturing plant in Smyrna. The study was completed before GM announced its decision to locate the Saturn plant in Spring Hill, but the results remain valid today. Our respondents tell us that our state's workforce and its attitude toward business are the reasons it has attracted the interest of manufacturers the world over. The article, "Why Business Likes Tennessee," appears on page three.

A companion piece by Bob Figgins and Parker D. Cashdollar, both associate professors of economics at UT Martin, examines how smaller communities in West Tennessee seek government and private assistance in their efforts to attract new industry. See "Industrial Assistance in West Tennessee" on page nine.

Another issue of concern to Tennesseans is the efficient use of industrial development bonds (IDBs) to finance local development. "The Right Way to Use IDBs" (page 10), authored by William F. Fox, David S. Kidwell, and Charles A. Campbell, targets export industries as the best uses for the limited number of IDBs allotted by the federal government. The underlying assumption is that IDBs should be used in a way that maximizes their potential to improve an area's economy.

"Taxes and State Borders" (page 16), the issue's third article, authored by William F. Fox, Donald R. Ploch, Patricia A. Price, and Susan E. Bott, examines how Tennessee's consumption taxes affect retail sales along the state's borders. The findings, based on mathematical modelling and interviews with business operators in Chattanooga, Clarksville, the Tri-Cities, and elsewhere, show that for every penny increase in the sales tax rate, retail sales and retail employment decline by a small but measurable amount.

The state's full employment unemployment rate (FEUR) is the focus of a study by Kevin R. Murphy. The FEUR is that theoretical level of unemployment where everyone who desires a job can find one. Knowing the correct FEUR will assist legislators in their efforts to tailor economic development programs to the actual problem. Previous research into the FEUR focused on its national level. "Tennessee's Full Employment Unemployment Rate," which begins on page 23, is the first attempt to determine the FEUR for individual states.

Finally, a state's future depends on its people. In their article, "Highlights on Tennessee's Projected Population," authors Donald W. Hastings and William F. Clevenger project that roughly 5.5 million Tennesseans will be around at the turn of the century. These projections, based on economic and demographic trends, show that the highest growth areas will be counties contiguous to the state's Metropolitan Statistical Areas. Read further, beginning on page 29.

Several of the articles in this issue have been published in monograph form for those who seek a more detailed review of the topic. For information on ordering these monographs, see the inside front cover of this issue.

The Center for Business and Economic Research is grateful to those organizations that provided funding in support of the research contained in this issue. The opinions expressed in these articles do not necessarily reflect those of the organizations that provided funding. We are also indebted to Mark Ingebretsen, Assistant Managing Editor, for his skillful condensations of the original technical manuscripts and published monographs.

William F. Fox, Associate Director
Center for Business and Economic Research

A survey of 325 manufacturers reveals what factors make Tennessee a good place to live.

WHY BUSINESS LIKES TENNESSEE

David A. Hake
Donald R. Ploch
William F. Fox

Why do manufacturing firms choose to site or expand in Tennessee rather than in other states? Recently, the Center for Business and Economic Research, together with the Tennessee Department of Economic and Community Development, undertook a study to discover just that.

To make the results useful for policy analysis, it was necessary to study whether reasons for a site decision varied with the type of firm and with the location of alternative sites in other states that firms might have considered. Additionally, the authors wished to discover what type of site decision faced each firm – whether the company was planning to expand an existing Tennessee facility; whether it was considering a new location or move from out of state; or whether the site was chosen for the start-up of a new enterprise.

The basis of the study was a questionnaire sent to 537 manufacturing firms listed in the Department of Economic and Community Development files as having expanded or developed new sites in Tennessee during the years 1980-1983. Each firm was sent a questionnaire directed to the officer responsible for the site decision. Some 325 firms (61 percent) responded, and the core of the study focused on how those 325 firms answered two extended questions regarding the factors which influenced their location decisions.

The firms surveyed were generally small, so the conclusions are not necessarily what would be found from a survey weighted more heavily toward larger firm locations, such as the Nissan and Saturn plants.

Factors Considered

The first question asked respondents to identify the importance that 21 different factors played in the selection of the region in which they finally chose to locate their firms. The intent was to discover what factors firms regard as important when they narrow down all conceivable alternatives to a smaller geographic region before making the final siting decision. This question is most important for evaluating how firms generally view the attractiveness of locations in Tennessee vis-a-vis alternative states, or how firms would view the characteristics of different regions within the state. Each firm may have defined the size of its geographic region differently. Some may have considered the southeast U.S. as the region in which to make the final location decision. Others may have viewed East Tennessee as the area

BEST AVAILABLE COPY

within which the decision was to be made. Further analysis based on data from other questions allowed the authors to distinguish between the responses of firms which considered only Tennessee sites and those which considered sites in other states.

It is clear from an analysis of the answers to this question that there is no such thing as an "average" firm. The interested reader is encouraged to consult the more detailed material in the tables. These tables reveal such things as (1) how the needs of larger firms differed from those of smaller firms when making a location decision; (2) how firms differ in their priorities depending on the type of site decision facing them; and (3) how firms vary in their decision making, depending on the number and location of alternative sites they must consider.

In the second question, respondents were asked which of 33 factors were used in selecting the "final site" and how the final site compared with the alternatives with regard to each of these 33 factors. This question is most important for seeing how firms view locations within the geographic region where they finally located. Many of these firms would have been comparing alternative Tennessee locations.

The results of each question were evaluated for all firms in the survey, and then for firms grouped according to the number of sites considered in the location decision, the type of location decision made, and the size of firm. No statistically significant difference was found in the responses for various types of industries, so the responses were not reported in terms of industry groupings. This does not mean that all industries behave the same in a location decision. The results found here may have arisen because the two-digit SIC categories used in this study were too aggregated to discern important differences in firm behavior. There were too few responses to divide the firms into more narrowly defined industry groupings.

TABLE I

FACTORS ESSENTIAL IN CHOICE OF A REGION
(Percent of 325 firms selecting each particular factor)

Rank	Essential Factors	Percent of Firms
1	Complement existing production facilities	34
2	Less union influence	33
3	Right to work laws	31
4	Pro-business attitude of state government	25
5	Worker productivity	22
6	Access to current markets	20
7	Skilled work force	14
8	Availability of credit	14
9	Low taxes	13
10	Open new markets	12
11	Cheap and available energy	11
12	Government support for building construction	11
13	Quality of life	10
14	Water supply	10
15	Cheap and available land	9
16	Access to raw materials	9
17	Tax concessions	8
18	In or near my current home	8
19	Low wages	6
20	Government support for site acquisition, etc.	6
21	Environmental regulation	3

The table above gives the overall ranking of factors most often selected by executives as essential in their choice of a region. Note that the first three factors were each considered by roughly one third of the respondents, while the factors ranked fourth, fifth, and sixth were considered essential by 20 to 25 percent of the respondents. The next 14 factors were each chosen by 10 percent of the firms. Viewed another way, roughly 90 percent of the firms did not consider these factors essential in their choice of a region. It is also important to note that since each of the responding firms did eventually locate or expand in Tennessee, these factors can be interpreted as attributes (either positive or negative) shared by all Tennessee sites.

HOW FIRMS RESPONDED

Choosing a Region

The question of what factors were considered in the choice of a region was examined first, in terms of what factors were essential in the location decision (defined as an absolute prerequisite to location) and, second, in terms of the degree of importance placed on each factor. Generally, the same factors appeared at the top and bottom of each list, though there were small differences in the order.

Firms tended to say that few factors were essential in the location decision. Those factors which were listed as essential varied widely across firms, as the top factor was regarded as essential by only 34 percent of the

firms. Only five other factors were considered essential by at least one-fifth of the firms. Nonetheless, relatively little variation occurred in the responses of firms when they were grouped in the ways noted above. This indicates that what a firm regards as essential in its choice of a region may be heavily determined by workings internal to that firm. Also, this is evidence that there are no single characteristics which immediately make a region more acceptable for business locations.

Though each factor was essential to the location decision only for a minority of firms, all 21 were an element in the location decision by some of the firms. Weights were assigned according to the degree of importance attributed to the factors. On average, 15 factors were found to be important or at least of some value in location decisions, while six factors rated between being of some value and not considered. No factor was, on average, rated between essential and important.

In general, firms listed three workforce characteristics in the top five factors, for each approach to evaluating the regional decision. These included less union influence, right-to-work laws, and worker productivity. Thus, one can conclude that the worker environment is regarded as the single most significant reason why firms chose Tennessee as a place to operate. Another reason was a desire to complement their existing production facilities, a factor listed as essential by most firms. Overall it ranked fourth in degree of importance. The main reason this item is near the top is that many of the firms were expanding plants already located in Tennessee.

The pro-business attitude of the state was also listed among the top five factors. Environmental regulation, government support for site acquisition, and low wages were rated essential by the smallest percentage of firms.

Implications for Policymakers

State government can influence four of the top five factors that firms regarded as most important in their site selection decisions. Right-to-work laws and less union influence are related to and jointly a result of state legislation. Worker productivity depends on the work ethic of Tennesseans, but also on the primary, secondary, and higher educational institutions. The pro-business attitude of the state is difficult to define, yet the state government sets the tone for this perception. Thus, though no single action by state government can insure that a wide number of firms will choose Tennessee, policies of the state are of clear significance in causing Tennessee to be considered by firms.

TABLE II

THE TOP SIX FACTORS ESSENTIAL IN CHOICE OF REGION BY TYPE OF SITE DECISION
(Ranked by Percent of Firms Selecting Factor)

Panel A			Panel B			Panel C		
*	New Enterprise Site Decision (49 firms)	Percent	*	New Location Site Decision (93 firms)	Percent	*	Expansion Site Decision (141 firms)	Percent
6	Access to current markets	35	2	Less union influence	46	1	Complement existing prod. facil.	54
2	Less union influence	33	3	Right to work laws	39	3	Right to work laws	28
3	Right to work laws	24	4	Pro-business attitude of state gov.	36	2	Less union influence	27
5	Worker productivity	22	6	Access to current markets	25	5	Worker productivity	22
16	Access to raw materials	22	5	Worker productivity	21	4	Pro-business attitude of state gov.	20
11	Cheap and available energy	20	1	Complement existing prod. facil.	21	8	Availability of credit	13

*Numbers conform to rank of this factor in Summary Table I.

Table II shows the rank of the top six factors deemed essential according to the type of site decision made by responding firms. "New Enterprise" (Panel A) is defined as a manufacturing operation opening for the first time. A "New Location" (Panel B) might be the re-location of a plant from another state or the establishment of a new branch plant. "Expansion" (Panel C) is increased employment and/or increased space in a currently operating plant. As can be seen, the differences between types are noticeable. The percentages listed on the right of each column indicate how firms making each of the three types of site decisions ranked a particular factor. The numbers on the left show how all 283 responding firms ranked that same factor.

Several small variations in responses by firm categories should be noted. First, firms which considered out-of-state sites before locating in Tennessee appeared to regard a greater number of factors as essential to their location decision than did firms which looked only at Tennessee sites. This variation seems reasonable, since these firms were evaluating sites across wider geographic areas where greater variation in factors would occur. Also, large- and medium-sized firms appeared to have somewhat more prerequisites than smaller firms.

Choosing a Final Site

The question of factors relating to choice of the final site was also analyzed in two ways. The first sought to identify what factors were used in choosing the final site. The second analysis focused on how the final site compared with the alternative sites considered. The factors contributing to final site selection were generally the same factors considered important in selecting the region in which to locate. Work-force-related attributes such as good work attitudes, productivity of workers, the availability of a skilled work force, and less union influence were all ranked in the top five. The pro-business attitude of the community and access to cheap and available energy were also near the top. All 33 factors listed in the questionnaire were used by at least 49 percent of the firms in selecting the final site. Firms appeared to have evaluated more factors when they chose a final site than they did in choosing a region.

One way of measuring how important each factor was in selection of the final site is to determine how strongly the final site compared with alternative sites. The final site selection was rated, on average, to be better for every factor than the alternative sites considered. Those factors in which the selected site was rated the strongest, relative to the final site, involved how well it complemented existing production facilities, and how readily it afforded access to a firm's current markets. The personal preference of a firm's managers also played an important role. By contrast, air transportation and quality of local schools were barely preferable to the alternative sites. These are weaknesses that have been well known in Tennessee, though it should be remembered that many choices at this level are between two Tennessee sites. The siting decisions were all made prior to the state's Better Schools Program.

Substantial variability in the responses to this question could be found when firms were grouped in various ways. For example, those firms that also considered out-of-state sites put more emphasis on right-to-work laws and the availability of credit than firms which considered sites only in Tennessee. Firms that considered only Tennessee sites placed more emphasis on the pro-business attitude of the

LOCATION BENEFITS OF TENNESSEE COMPARED TO OTHER SOUTHEASTERN STATES

Other Southeastern States Considered	Reasons Tennessee Sites Were Judged Superior
Alabama	Air transportation, lower wages, quality of life, available building
Arkansas	Transportation, lower wages, pro-business attitude of government
Florida	Air and highway transportation, and location near a large city (Memphis)
Georgia	Available land, good tax structure, government support, transportation, lack of union influence, and a skilled work force
Kentucky	Highway transportation, location near large cities, government support, skilled work force, available building
Mississippi	Highway and rail transportation, available building, government support, lower taxes, available credit, good utilities, and location near large cities. An important factor seems to have been ready access to industrial revenue bonds. Only firms choosing Tennessee over Mississippi mentioned this, and three of the four that did were located in Memphis. Thus, these decisions might have been more related to location in the Memphis metropolitan area than to a choice between Tennessee and Mississippi.
North Carolina	Access to markets and supplies, available building, community support, lower taxes, non-unionized skilled labor, available utilities
South Carolina	Access to markets and supplies, available building, government support, and skilled labor
Texas	Skilled work force, community support, access to markets and supplies, lower taxes, available utilities, and a good work ethic
Virginia	Government support, lower taxes, available utilities

community and government support for site acquisition.

Firms of different sizes also responded differently. Large- and medium-sized firms, for example, considered the pro-business attitude of the community as relatively more important. Large firms found the final site more advantageous for its workers' productivity. With small- and medium-firms the personal preference of top executives was an important reason why the final site was deemed better. Big differences were also found in the type of location decision made. For example, firms planning to establish a new enterprise at a Tennessee site used fewer and more varied factors in their site decisions.

Firms were also asked what strategies they used in making their siting decisions. The most widely used methods depend on personal interactions. These include such things as site visits and the personal knowledge of management. Locally provided support was also considered important. The businesses rarely used consulting firms, published reports, or discussions with executives from other companies in their decisions. But the firms in the sample tend to be small, and presumably less likely to call on external data sources.

SUBJECTIVE RESPONSES

In a final section of the questionnaire, respondents were asked to provide short statements about the factors crucial to the choice of the final site.

Slightly more than half considered only one site. The reason given is that their plans called for an expansion of an already existing facility. Put simply, the site was pre-determined. In many cases, respondents pointed out that the expansion was one of an existing production line. As such, it could occur only at the plant producing that product. Thus, there was never any thought given to other sites.

TABLE III

THE TOP SIX FACTORS CONSIDERED ESSENTIAL IN CHOICE OF REGION BY NUMBER AND LOCATION OF ALTERNATIVE SITES
(Ranked by Percent of Firms Selecting Factor)

Panel A			Panel B			Panel C		
*	Firms that Considered Only One Site (140 firms)	Percent	*	Firms that Considered Two or More Sites all in Tennessee (76 firms)	Percent	*	Firms that Considered at Least One Out-of-State Site (93 firms)	Percent
1	Complement exist. prod. facil.	45	2	Less union influence	37	2	Less union influence	40
2	Less union influence	23	3	Right to work laws	32	3	Right to work laws	38
3	Right to work laws	23	4	Pro-bus. attitude of state gov.	24	4	Pro-bus. attitude of state gov.	38
5	Worker productivity	18	1	Complement exist. prod. facil.	23	1	Complement exist. prod. facil.	31
4	Pro-bus. attitude of state gov.	15	5	Worker productivity	21	5	Worker productivity	29
7	Skilled work force	15	6	Access to current markets	21	6	Access to current markets	26

*Numbers conform to rank of this factor in summary Table I.

Table III looks at the top six factors deemed essential by firms according to the number of sites they considered. Percentages on the right column of each panel indicate the order in which firms ranked a particular factor. Numbers on the left of each column indicate how that same factor was ranked by all 283 firms. Firms considering at least one out-of-state site had more conditions than did firms considering only in-state sites or those considering only one site. Six factors were deemed necessary by at least 25 percent of the executives considering out-of-state sites. In contrast, just two factors were considered necessary by more than 25 percent of firms choosing between two or more Tennessee sites, and only one factor was checked by more than 25 percent of the executives considering one site. Forty-five percent of the firms considering only one site checked "complement existing production facilities" as a necessary attribute. This is notable, since it was chosen with nearly twice the frequency of the second ranked factor.

TABLE IV

THE TOP SIX FACTORS ESSENTIAL IN CHOICE OF REGION BY SIZE OF FIRM
(Ranked by Percent of Firms Selecting Factor)

Panel A			Panel B			Panel C		
*	Small Firms (50 or fewer employees)	Percent	*	Medium Firms (51 to 200 employees)	Percent	*	Large Firms (201 or more employees)	Percent
6	Access to current markets	32	2	Less union influence	36	1	Complement exist. prod. facil.	48
2	Less union influence	30	1	Complement exist. prod. facil.	30	4	Pro-bus. attitude of state gov.	38
3	Right to work laws	30	3	Right to work laws	27	3	Right to work laws	36
1	Complement exist. prod. facil.	24	4	Pro-bus. attitude of state gov.	23	2	Less union influence	31
10	Open new markets	19	5	Worker productivity	22	5	Worker productivity	28
5	Worker productivity	17	7	Skilled work force	16	9	Low taxes	17

*Numbers conform to rank of this factor in summary Table I.

Table IV ranks the top six factors deemed necessary by small, medium, and large firms. Percentages on the right of each panel indicate how each size firm ranked a particular factor. Numbers on the left of each panel indicate how that same factor was ranked by all 283 responding firms. Medium and large firms were generally in agreement on the top five essential factors. With the exception of the factor, "complement existing production facilities," all had to do in some way with the workforce. In contrast, there are notable differences in the factors deemed essential by small firms.

Other reasons for confining attention to one site were that a work force (partly experienced and trained in the existing facility) was available and that a building or building site had suddenly become available.

In an effort to improve the response rate, executives from about eight firms were called after they had responded that the firm had neither expanded nor opened a new location. When pressed, these executives indicated they had expanded their firms' facilities, but the expansion was unplanned. Buildings or sites had become available. Other respondents noted on the questionnaire that their expansion was, "no big deal" because it just happened. Expansion in such cases may have been triggered by the sudden availability of a building or land or some other golden opportunity.

Other factors mentioned were local government support, availability of credit, ownership of the land needed for expansion, and the fact that the owners/managers wanted to continue to live in Tennessee.

Reasons Firms Considered Alternative Sites in Other States

While the Southeast clearly dominated the location of alternative sites, there were not enough instances where Tennessee was paired with any one state to provide definitive data.

Geographic location was a major factor. Tennessee was often chosen because it is a good location for shipments to and from markets and suppliers. This factor is reinforced by excellent interstate highway connections.

A second theme is generally related to the labor market. Labor, including skilled labor, was seen as available and at a low wage scale. The absence of unions, or their minimal influence, was also a factor considered important.

A third theme was government support, and here the pro-business attitude of the state or community was deemed important. The content of this concept includes local infrastructure such as credit and good utility connections, right-to-work laws, and lower taxes. These were cited by firms choosing a Tennessee site over a site in Kentucky or Mississippi.

While each decision is unique and must be treated that way, the summary over all states leads to the conclusion that geographic location, government support, and a favorable labor market are central themes which dominate the location decision. In several instances, though, the particular interest of local leaders was cited as a crucial factor. As one respondent put it: "They worked hard to get us."

Industrialization Assistance in West Tennessee

Bob Figgins
Parker D. Cashdollar

What factors are considered when an industry decides to locate in Tennessee? In a recent survey conducted to assess the degree that various agencies are utilized by West Tennessee towns in their development efforts, a questionnaire was mailed to mayors of 53 towns. Thirty-six responses were received. Only one respondent had a population of over 11,000.

The objectives of the survey were to determine (1) the extent of community success in attracting industry, (2) which agencies the communities had approached seeking help in attracting industry, and, (3) which of these agencies were considered to be helpful. Data are presented according to town size and whether or not new indstry had located in the town within the last five years. The two smallest towns responding stated they were not "actively seeking new industry" because: "the town is too small" (pop. 452) and "inadequate sewer capacity" (pop. 624). The following data are from the 34 towns that have been "actively seeking new industry" during the last five years.

Some 56 percent of the towns under 2500 and 61 percent of the towns over 2500 were successful in attracting new industry. However, the average number employed in new plants was greater in the larger towns than in the smaller towns (126.5 versus 70.2).

In attempting to attract new industry, 31 of the 34 communities indicated they had sought help from federal, state, and local agencies. The three towns which did not seek help from any of the available agencies all had populations under 2,500, and none of them was successful in attracting new industry.

Table 1 contains data reported in response to the question, "Which agencies have you used or sought help from?" The data are reported according to town size and whether the town was successful or unsuccessful in attracting new industry.

From these data one can draw two generalizations: (1) larger towns sought help from more agencies than small towns; and (2) successful towns in each size category sought help from more agencies than did unsuccessful towns.

Other findings of the survey revealed that of the 123 agency contacts, 98 (or 79.7 percent) were considered by the towns as "helpful," regardless of the town's success in attracting new industry. An average of 3.6 agencies were contacted per town. Successful towns reported 82.1 percent of agency contacts as "helpful," while unsuccessful towns found 74.6 percent "helpful." Those agencies specializing in economic development were contacted much more often and were generally considered more "helpful" than the multipurpose agencies such as the universities, Farmers Home Administration, and HUD.

In general, most communities are actively seeking new industry to revitalize their areas, and in seeking help from outside agencies have reported a good success rate, regardless of the community's record in attracting new industry within the previous five years. (An expanded and detailed version of this article is available from the authors.) ■

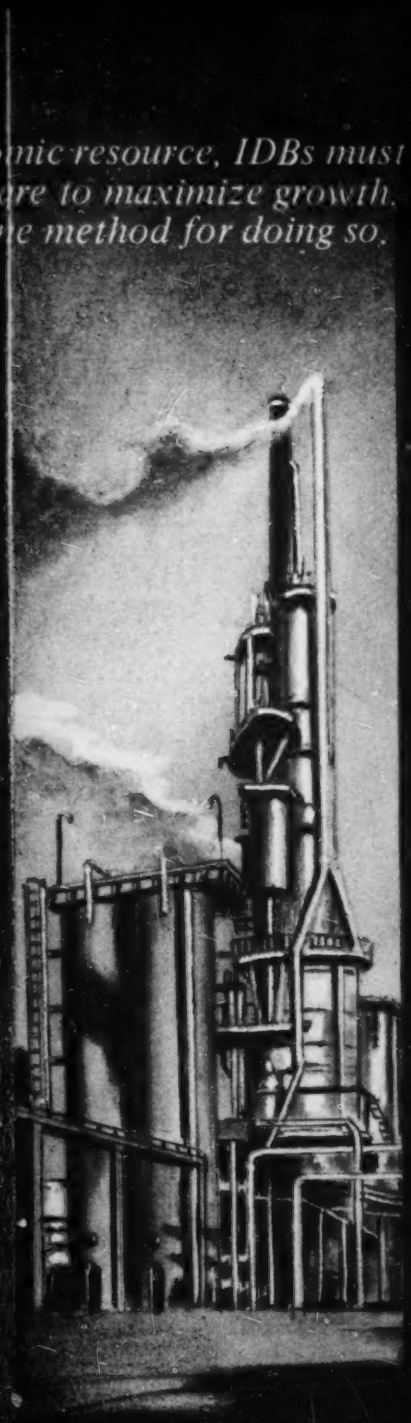
TABLE 1

RATE OF SUCCESS OF TOWNS SEEKING ASSISTANCE
(By Agency)

	Town Population			
	Under 2,500		Over 2,500	
	Successful	Not Successful	Successful	Not Successful
Chamber of Commerce	7 (78%)	2 (29%)	8 (73%)	6 (86%)
Tennessee Department of Economic and Community Development	5 (56%)	3 (43%)	11 (100%)	6 (86%)
West Tennessee Industrial Association	5 (56%)	1 (14%)	10 (91%)	6 (86%)
Local Industrial Development Boards	4 (44%)	1 (14%)	9 (82%)	6 (86%)
Northwest/Southwest Tennessee Development District	4 (44%)	2 (29%)	4 (36%)	4 (57%)
Universities	0 (0%)	1 (14%)	2 (18%)	0 (0%)
HUD	0 (0%)	2 (29%)	4 (36%)	1 (14%)
Farmers Home Administration	1 (11%)	3 (43%)	1 (9%)	0 (0%)
Others	1 (11%)	1 (14%)	2 (18%)	0 (0%)

Note: Figures in parentheses represent percentages of towns seeking help.

As with any economic resource, IDBs must be used efficiently if they are to maximize growth. The authors outline one method for doing so.



The Right Way To Use IDBs

William F. Fox
David S. Kidwell
Charles A. Campbell

Industrial development bonds (IDBs) have been a source of controversy since their inception in the 1930s. Issued by municipalities or local governments on behalf of corporations, IDBs are bonds that are often used as subsidies to attract industry to a specific location. They are similar to tax-exempt bank loans as well as to municipal revenue bonds in that both have coupon income which is exempt from federal income tax. IDBs are purchased primarily by commercial banks, whereas many bonds are purchased by banks and individuals. The terms industrial revenue bond (IRB) and industrial development bond (IDB) are synonymous.

The first IDBs were authorized in 1936 in Mississippi. Their intent was to attract industry to an economically depressed area through the offer of tax-exempt financing. IDBs have since evolved into a general investment subsidy, a subsidy that is now used for infrastructure improvement, urban renewal, warehousing, and retail establishments as well as the more traditional manufacturing uses. This shift in usage has resulted in more nonmanufacturing issues and more issues in metropolitan areas.

The elements of the IDB controversy have included questions about the needs and purposes of IDBs and their effectiveness, as well as concerns about the growth of IDB issuance and the resulting growth in lost federal revenues.

Congress has addressed these issues through legislation three times. The most recent legislation affecting IDB issuance is the 1984 Federal tax law, which is better known as the Deficit Reduction Act of 1984 (DEFRA). One provision of DEFRA requires that each state limit IDB issuance to a maximum dollar amount based upon a state's population. Most states, Tennessee among them, have not effectively limited IDB issuance in the past. Now DEFRA forces each state to decide how best to allocate a limited amount of IDBs. This article lists a series of guidelines that would do just that.

IDB Use

The Congressional Budget Office has estimated (Table 1) that total industrial development bond financing for the U.S. has grown from $5.7 billion in 1975 to over $22 billion in 1983 (a compound annual growth rate of nearly 19 percent). Since 1979 small issues of Tennessee have grown from $75.8 million in 1974 to almost $640 million in 1983.

The growth rate of nonmanufacturing issues is 56 percent, or more than twice the 27 percent growth rate of total IDBs (see Table 2). The shift to more nonmanufacturing investment subsidies in Tennessee is similar to the situation in many other states. Such a change represents a change in philosophy – whethe deliberate or not – from the original intent of IDBs. Perhaps as a result, some states have established stringent standards for IDB issuance, and these standards sometimes exclude nonmanufacturing use.

The Inappropriate Use of IDBs

Concerns that IDBs are being used inappropriately were expressed in Congress and elsewhere as early as 1963. Often these concerns center on the small issue exemption, a special provision for IDBs below $10 million. These small issues constitute the major portion of all IDBs, and they tend to be used to finance nonindustrial facilities. Small issues are also the source of much of the Congressional concern about IDBs.

TABLE 1

INDUSTRIAL REVENUE BOND FINANCING BY TYPE, CALENDAR YEARS 1975-1985
(In Billions of Dollars)

Year	Pollution Control	Small Issue	Other[a]	Total
1975	2.1	1.3	2.3	5.7
1976	2.1	1.5	2.5	6.1
1977	3.0	2.4	3.2	8.6
1978	2.8	3.6	3.2	9.6
1979	2.5	7.1	2.2	11.8
1980	2.5	9.2	2.5	14.2
1981	4.3	12.6	2.7	19.6
1982	5.9	12.7	4.1	22.7
1983	4.5	13.7	4.6	22.8
1984 Estimate	5.0	14.4	5.1	24.5
1985 Estimate	5.5	17.3	5.6	28.4

a. Includes activities such as sewage disposal, airports, and docks.

Source: Department of the Treasury and Congressional Budget Office.

FEDERAL LEGISLATION AFFECTING IDBs

Congress attempted to restrict IDB issuance in 1968, 1982, and finally in 1984 with DEFRA. In 1968 critics of industrial development bonds were concerned that public funds were being used to subsidize projects that could have proceeded without subsidization. These critics were also concerned that a surge in such bonds would cause increased revenue losses to the federal government, in addition to increased state and local borrowing costs. Congress passed the Revenue Expenditure and Control Act of 1968 in order to address these problems. The act withdrew tax exemption on IDBs for all but certain quasi-public service projects (such as utilities, industrial parks, sewage and solid waste disposal, mass transportation, and parking facilities) and small issues which could be used to assist the location of small businesses.

The volume of IDBs did decrease after 1968 for a short time, because large corporations could no longer use IDBs to finance major facilities. But beginning in the mid 1970s, small issue IDBs began to escalate rapidly, especially during periods of high interest rates.

In 1982 Congress enacted the Tax Equity and Fiscal Responsibility Act (TEFRA), which further restricted the use of IDBs. DEFRA was passed two years later, bringing even more restrictions on the use of IDB financing. The act limited the amount of IDBs which can be issued by any state, prohibited issuance for certain uses and provided general rules and guidance for issuance. Overall, DEFRA limited state IDB issuance to $150 for each state resident, or $200 million, whichever is greater. The ceiling remains $150 per capita until after 1986, when it is reduced to $100 per capita.

The 1984 tax law also prohibited certain types of facilities and uses. These include airplanes, health clubs, liquor stores, gambling facilities, and the financing of consumer loans.

GOALS FOR IDB ISSUANCE

Basic Concepts

Following are definitions and descriptions of some of the basic concepts and terminology that will be used in the remainder of this article. Here, we will be considering economic base theory, which, simply put, suggests that there are two types of economic activities in any economic region: "export" and "locally oriented" activities.

Export activities are sometimes referred to as basic activities. If an industry (or firm) is export oriented, it produces something which is sold outside of the region. Dollars thus come into the region from the outside because of the activity, providing increased direct employment and income to the region. For example, a manufacturer in an export activity may provide direct employment and income to the region of 10 jobs and $200,000. These are 10 jobs that exist to serve an export market and bring in $200,000 dollars of income from outside the region. But the impact of the activity does not stop there.

Locally oriented activities may exist because of, or in support of, export activities. These local activities may include business services, distributors, wholesalers, retailers, and similar functions, though the activities of such groups can sometimes be oriented towards export as well. Export should not be interpreted to mean strictly manufacturing. Neither should local be interpreted as indicating nonmanufacturing.

Many uses for IDBs will merely redistribute existing economic activity and create no new employment or output. If two firms exist to serve a given market and a third firm is established for that same market, there will be no increase in output. Instead, economic activity will be reallocated from the two original firms to the third.

One example is the fast food franchise. If a subsidy is not provided and a market exists, some fast food operation will locate to serve the market anyway. More fast food operations will not increase demand for fast food, but merely redistribute economic activity from unsubsidized to subsidized operations. Thus, the subsidy will not increase output. However, it will provide a competitive advantage to the subsidized operation.

Tourism activities provide a good example of the export/local dichotomy. Consider a large theme park which draws tourists to a region to which they would not otherwise have come. In this case, new dollars are being brought into the region. This is an export-oriented activity. Next, consider the hotels that spring up in the vicinity of the theme park in order to serve the tourists drawn to the park. Tourists do not come to the area because of the existence of such hotels. They come to the area to go to the park, and because of this, they define a market for the hotel to serve. If the market is there, such hotels will appear. Since these hotels do not create the market but serve an existing market, they are therefore "local" in nature.

A Philosophy for IDB Issuance

Industrial development bonds are often viewed as a costless subsidy or as a subsidy which is a cost only to the Federal government, since local governments are not paying for either principal or interest on the bonds. The result is that IDBs are often placed casually with little concern over the benefits and costs of the issues. But IDBs are not costless. Each new issue entails an opportunity cost, and each has an effect on municipal bond interest rates.

An opportunity cost is the benefit that is lost because of an alternative choice. Thus, if there is a limit on the number of IDBs that may be issued, and if an IDB is issued for a project that does not create output for the state, then the potential growth in export activity and the resulting gains in output and employment are lost.

Interest costs must also be considered. Municipal and state governments pay interest indirectly because IDBs compete for funds with other tax-exempt bonds. An increase in the supply of IDBs will lead to an increase in the interest rates on all tax-exempt bonds.

Finally, the federal government loses tax revenue from the issue of IDBs, and this lost revenue may affect local areas through reductions in revenue sharing, federal services, or increases in federal taxes.

The philosophy established here takes the costs of IDBs into account. It is based upon the goals of maximizing economic growth in the state, achieving equity within industries in the state, and balancing growth across the state. This philosophy can be summarized in five major principles that should be followed in allocating IDBs. Highest priority should be given to the following:

1. Projects which produce goods or services for export outside of Tennessee
2. Firms considering Tennessee but able to locate elsewhere
3. Projects financed with out-of-state resources
4. Making IDBs equally available to similar firms operating within a single industry so as to eliminate competitive disadvantages caused by such subsidies
5. Providing IDBs to economically distressed areas

Principle One – Export Enhancements

Export-oriented firms are the most obvious candidates for subsidization priority. Examples might be manufacturing firms producing products for a national or regional market, manufacturing firms producing intermediate goods which are used by firms producing for export, regional or national warehousing, and national corporate headquarters. Such activities will stimulate new economic activity.

One other type of activity which stimulates export activity is infrastructure improvement, which includes services and facilities such as sewage

and waterworks, ports and terminals, roads, streets, lighting, and utility distribution systems. IDBs used to finance infrastructure improvements can be an attractive incentive to firms that are considering a move to the area.

Principle Two – Firms with Alternative Location Possibilities

The second principle guiding the issue of IDBs is to use them to support firms which are not seeking to serve an existing Tennessee market. As with the first principle, the goal is to subsidize those firms which will increase output and employment. If a firm has already decided to locate in Tennessee, the provision of an IDB will not increase employment or output for the state, but will serve only to reduce the firm's cost, with no benefit to the state. Similarly, if a firm chooses to locate in Tennessee because of a feature unique to Tennessee (such as the Smoky Mountains) there is no point in providing a subsidy. Such a subsidy may slightly reduce costs, but if the operation is to be profitable, it will locate in Tennessee with or without the IDB.

Principle Three – Source of Capitalization

The third principle maintains that projects financed through out-of-state resources should be considered superior to projects financed through in-state resources. There are two primary reasons for this proposition. First, out-of-state financing brings new dollars to the state and leaves money that is already in the state for other uses. Secondly, because of the nature of the banking system and the tax laws, IDBs must compete with other tax-exempt bonds. As the supply of IDBs increases, the interest rates on all tax-exempt issues are likely to increase.

Principle Four – Competitive Equity

The fourth principle is recognition that when one firm in an industry is provided with an IDB subsidy, it creates a competitive advantage for that firm. Such a subsidy reduces the firm's costs and thereby allows it to operate on a slightly lower level of revenues than would otherwise be the case. Likewise, such a subsidy reduces efficiency within an industry and merely redistributes economic activity from other firms to the subsidized firm.

TABLE 2

INDUSTRIAL DEVELOPMENT BONDS ISSUED IN TENNESSEE (1974-1983)*

Year	Total Number of Issues	Total Amount of Issues (Millions of Dollars)	Manufacturing Issues and Percent of Total	Manufacturing Amount and Percent of Total (Millions of Dollars)	Non-manufacturing Issues and Percent of Total	Nonmanufacturing Amount of Percent of Total (Millions of Dollars)	Total Amount of Issues Per Capita (Dollars)
1974	21	75.8	15 (71%)	67.7 (89%)	6 (29%)	8.1 (11%)	
1975	35	106.0	24 (69%)	88.0 (83%)	11 (31%)	18.0 (17%)	24.9
1976	43	67.4	38 (88%)	60.9 (90%)	5 (12%)	6.5 (10%)	15.6
1977	41	66.2	29 (71%)	50.9 (77%)	12 (29%)	15.3 (23%)	15.0
1978	47	70.0	35 (74%)	60.1 (86%)	12 (26%)	9.8 (14%)	15.6
1979	98	160.4	62 (63%)	111.3 (69%)	36 (37%)	49.1 (31%)	35.4
1980	167	276.8	68 (41%)	125.7 (45%)	99 (59%)	151.1 (55%)	60.3
1981	230	332.0	77 (33%)	150.2 (45%)	153 (67%)	181.8 (55%)	71.2
1982	280	504.1	70 (25%)	193.8 (38%)	210 (75%)	310.3 (62%)	106.6
1983	267	639.1	80 (30%)	198.8 (31%)	184 (70%)	440.3 (69%)	133.5

*Includes small issue and tax exempt bonds.

Note: Prior to 1974, federally tax-exempt IDBs were used almost exclusively for financing of manufacturing projects.

Source: Tennessee Department of Economic and Community Development, Industrial Research Section.

IDBs are often viewed as a costless subsidy, but each new issue entails an opportunity cost, and each has an effect on municipal bond interest rates.

One of the classical complaints about IDB usage is that large national chains are often better able to obtain IDBs than smaller "mom and pop" firms. The result is a shift in economic activity from the smaller firms to the national chain and an unfair competitive advantage for the national chain. It is thus preferable to whatever extent possible to make IDBs equally available to all firms within a single industry.

Principle Five— Geographic Equity

The fifth principle concerns the geographic distribution of IDBs. Where possible it is best to subsidize an activity that will increase employment and output and attract outside money to an economically depressed area, provided the activity is not locally oriented. While such an action will not *maximize* state output, it will *increase* state output, at the same time aiding a distressed area.

The Effect of Subsidies on Location Decisions

Several studies reveal that subsidies have only a marginal effect on location decisions. Siting decisions are infrequent, discrete actions which generally occur when the firm is established, when growth of the business demands a major expansion, or when there is a major change in the location of suppliers or customers. The underlying factor in any choice of locations is the rate of return on the owners' investment (i.e., profits). Firms are interested in profits not just today or next week, but over a considerable future time period.

OPERATIONALIZING THE ALLOCATION PRINCIPLES

The principles described above assume that applications for IDBs exceed allocating authority. While this is not an immediate certainty, it is an eventual likelihood. There may be no need to have any system of guidelines if the limit proves not to be constraining.

It is the authors' recommendation that three categories be established. IDBs would be allocated to these categories based upon the decision rules demonstrated in Figure 1.

Category I

According to the philosophy established here, facilities which are export-oriented should be placed in Category I. Manufacturing, as a broad category, is by far the most significant type of export-oriented activity, and the authors recommend including all manufacturing firms in Category I. The remainder of Category I, the authors believe, should be composed of facilities or projects that contribute to the infrastructure of the Tennessee economy but do not normally receive funding by government. Along with these firms would be nonmanufacturing export-oriented firms.

The remainder of Category I should be composed of facilities or projects that contribute to the infrastructure of the Tennessee economy but do not normally receive funding by government. Along with these firms would be nonmanufacturing export-oriented firms. Such nonmanufacturing projects may include lighting and power facilities, parking facilities, regional warehousing or distribution facilities, interstate headquarter locations, and business services.

It is not possible to construct an all-encompassing list of activities that qualify for Category I. Furthermore, given the historic volume of manufacturing IDBs, it is unlikely that all Category I projects will exceed the total IDB limit. Therefore, Category I contains projects which should be automatically approved. However, in the event that prioritization becomes necessary, it is recommended that the following guidelines be utilized:

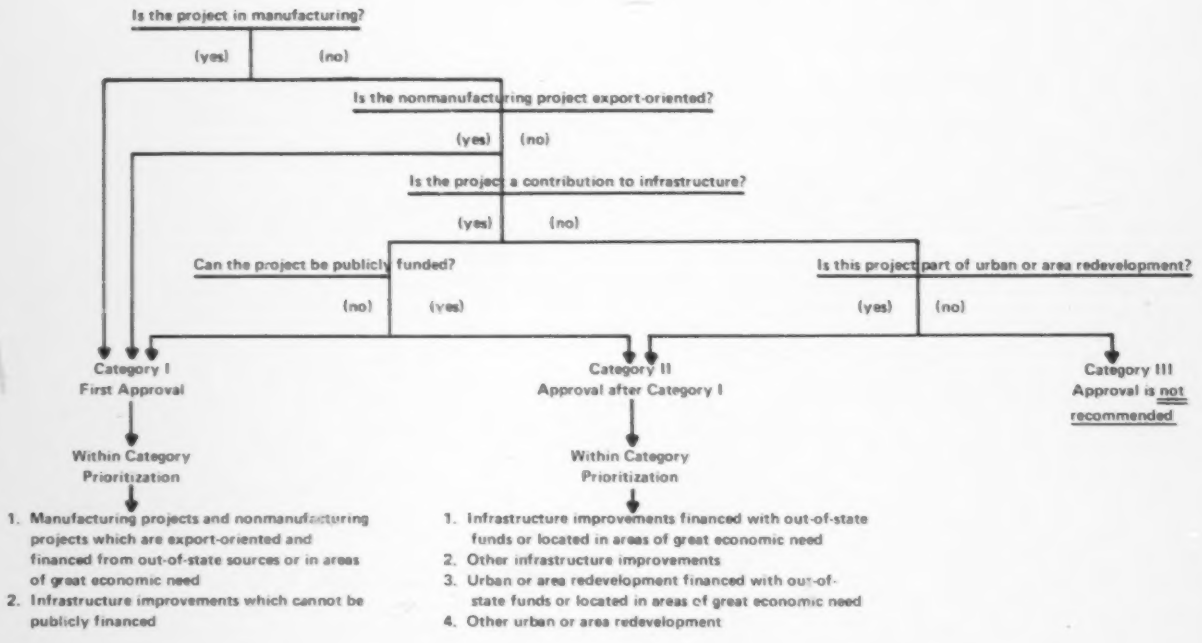
1. Highest priority should be given to manufacturing and those nonmanufacturing projects which bring in money from out of state; projects financed from out-of-state sources, or projects located in areas of great economic need. Such projects might include headquarters of national corporations, regional distribution facilities, and regional warehousing facilities.
2. Second in priority would be infrastructure improvements that cannot receive public funding (industrial waste treatment facilities, for example). Infrastructure could also be construed to include business services.
3. The lowest priority will go to all other projects meeting the Category I criteria. Such items include nonmanufacturing export-oriented projects financed with in-state resources and located outside areas of great economic need.

Category II

Category II projects are those which contribute to the infrastructure of the Tennessee economy and can be financed by public funds. It would also include projects which help preserve a city's or an area's tax base. An example of such an infrastructure improvement would be projects resulting from the privatization of water

FIGURE 1

IDB ALLOCATION DECISION TREE


Is the project in manufacturing?
(yes)
(no)
Is the nonmanufacturing project export-oriented?
(yes)
(no)
Is the project a contribution to infrastructure?
(yes)
(no)
Can the project be publicly funded?
(no)
(yes)
Is this project part of urban or area redevelopment?
(yes)
(no)
Category I
First Approval
Within Category
Prioritization
1. Manufacturing projects and nonmanufacturing projects which are export-oriented and financed from out-of-state sources or in areas of great economic need
2. Infrastructure improvements which cannot be publicly financed
Category II
Approval after Category I
Within Category
Prioritization
1. Infrastructure improvements financed with out-of-state funds or located in areas of great economic need
2. Other infrastructure improvements
3. Urban or area redevelopment financed with out-of-state funds or located in areas of great economic need
4. Other urban or area redevelopment
Category III
Approval is not recommended

treatment plants. It is recognized that while there is an opportunity cost involved, if IDBs are used for this purpose, privatization does provide potential benefits to the local community through lower sewer rates. Further, the facility does contribute to the infrastructure of the Tennessee economy. Therefore, such projects should be considered for IDBs if sufficient allocation authority remains after Category I.

Similarly, redevelopment projects do not generally contribute to employment and output growth. But they are important to local areas and in some cases contribute services and amenities that help attract industry. Therefore, while not of the same priority as, for instance, manufacturing, redevelopment projects should be considered in the IDB allocation if sufficient allocation authority exists.

Category III

Category III is composed of all other projects not mentioned or described in the first two categories. IDBs should not be issued for projects falling within this category. Such projects would include all retail establishments and services (except business services) such as restaurants and hotels.

Making the Allocation Decision

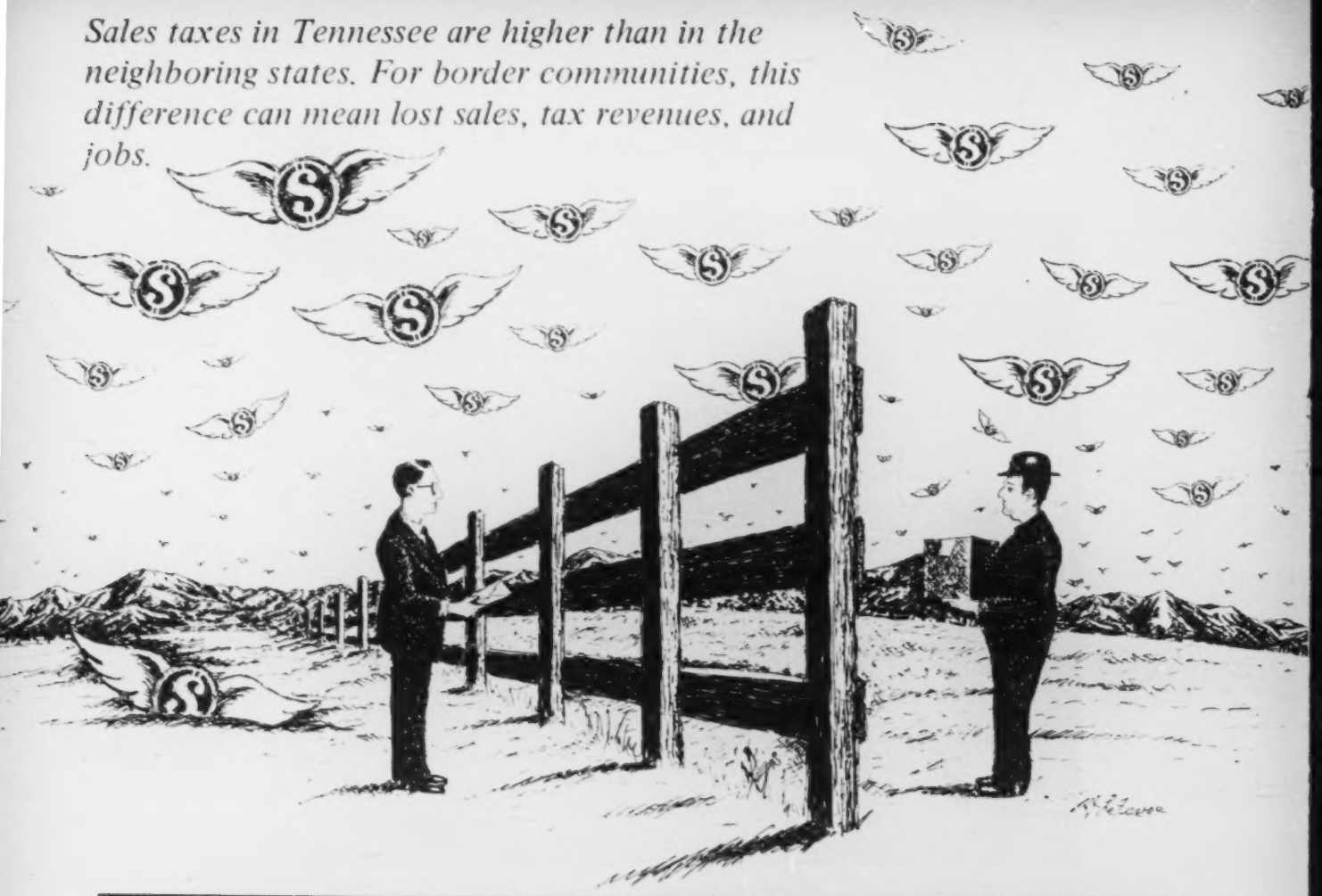
Figure 1 illustrates the decisions which should be made in allocating IDBs according to the above principles. The decision tree first establishes the appropriate category for any given project. Prioritization criteria are then provided within each category.

All manufacturing projects immediately qualify as Category I projects. This leaves only nonmanufacturing projects for further categorization. If the nonmanufacturing project is export-oriented, as in the case of regional or national warehousing and regional or national corporate headquarters, that project is also assigned to Category I.

For other nonmanufacturing projects, the next decision is based upon whether the project contributes to the Tennessee infrastructure. Power and lighting projects, sewage and water treatment facilities, solid waste disposal, and business services are all examples of such infrastructure projects. If a project qualifies as infrastructure, the next question is whether or not it can be financed with public funds. A community's water treatment facility is a good example of such a project. If the infrastructure project can be publicly funded, i is assigned to Category II. If it cannot be publicly funded (as would be the case, for example, with industrial waste treatment facilities), then the project is assigned to Category I. If the nonmanufacturing project is part of an urban or area redevelopment project, it will be assigned to Category II.

If the project is not in manufacturing, is not export-oriented, does not contribute to Tennessee's infrastructure, and is not part of a redevelopment project, it falls into Category III, and approval is not recommended. ■

Sales taxes in Tennessee are higher than in the neighboring states. For border communities, this difference can mean lost sales, tax revenues, and jobs.



TAXES AND STATE BORDERS

William F. Fox
Donald R. Ploch
Patricia A. Price
Susan E. Bott

The structure of a state's tax system has inevitable effects on that state's economy. One special class of economic effects arises along the state's borders. Here differences in the tax structures of two adjoining states can create distortions that would not arise elsewhere in either individual state. These distortions occur because tax differences which would be too small to change behavior across wide geographic areas may still be large enough to alter behavior in the narrow areas along state borders.

A recent study undertaken by Center for Business and Economic Research (funded by the Tennessee Special Joint Legislative Task Force on Taxations, with some additional funding provided by the U.S. Department of Housing and Urban Development) documents how differential tax structures affect economic activity in three urban areas and two rural areas along the Tennessee state borders. The urban areas chosen for study were the Metropolitan Statistical Areas of Clarksville, Tennessee/Hopkinsville, Kentucky; Tri-Cities; and Chattanooga (see Figure 1). Byrdstown and Union City, Tennessee were selected as rural places to be analyzed. In all cases the areas were chosen because the tax differences along their borders represent the greatest of any distortions in the state. Findings from the study of these places can be used to infer the effects of tax differentials in other places.

The issue being considered here is the distortions created by the different tax structures, not by the level of taxation. The main hypothesis raised is that high consumption taxes in Tennessee push sales-taxable purchases into Kentucky and other border states. As sales shift into these other states, retail employment is expected to follow. On the other hand, income taxes in the border states create incentives for other categories of employment to occur in Tennessee. For example, people who are self-employed, but not retailers, may prefer to live and work in Tennessee in order to avoid paying the Kentucky income tax, yet they may still do their shopping in Kentucky.

Two approaches are employed in the analysis of border tax effects. The first is the use of statistical techniques to test for shifts in the distribution of retail sales and employment in response to changes in tax rates. The second approach is the use of subjective interviews with business leaders and consumers to determine their perceptions about how taxes influence activity along the border.

STATISTICAL ANALYSIS

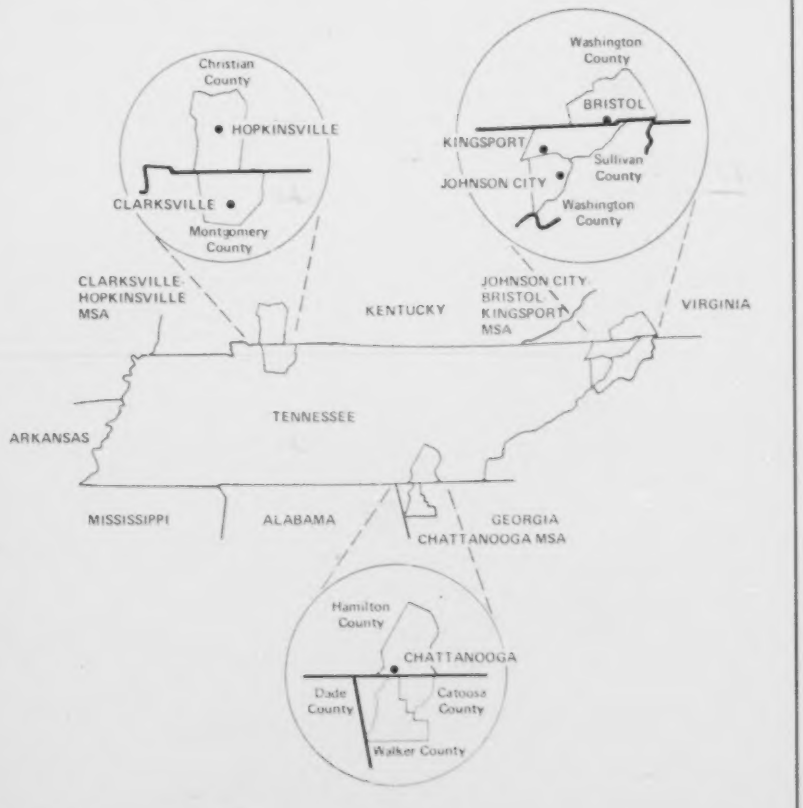
Four separate data series were collected for testing the effect of the tax structure on consumption and employment. Two are related to consumption and two to employment. One consumption data series is annual sales from 1965 through 1982. The long time period is desirable because it permits analysis of how sales responded to many tax rate changes, including those for the cigarette, alcohol, and general sales taxes. Sales data were obtained from the Departments of Revenue in Tennessee, Kentucky, and Virginia. Sales data for Georgia were not available for a sufficient time period.

A second consumption data series is taxable sales by quarter from 1974.3 through 1982.4. As was true above, taxable sales are sales tax collections for sales made during the quarter, divided by the appropriate sales tax rate. Sales are disaggregated into five subcategories, permitting examination of the tax effects by type of sales.

The final two data series are annual employment in retail trade and annual nonfarm private wage and salary employment for 1967 through 1982. These data are used to examine the employment responses which accompany any shifts in sales caused by tax changes. The Bureau of Economic Analysis, U.S. Department of Commerce, is the source of these data.

FIGURE 1

TENNESSEE AND SELECTED METROPOLITAN STATISTICAL AREAS (MSA)



Results of the Clarksville-Hopkinsville MSA Statistical Analysis

Quarterly Sales: Equations to explain the sales in Montgomery County, Tennessee, relative to those in Christian County, Kentucky, were estimated for total sales, apparel stores, furniture stores, automobile dealers, food for consumption away from home, and food for consumption at home. These subcategories do not equal total sales, but are used as tests of the consumption categories where response to tax rate changes might be expected.

During the period analyzed, the authors found that relative sales in Montgomery County rose 1.64 percent for every 1 percent increase in the ratio of population. Thus, relative sales rose more rapidly than relative population. Moreover, population appears to be a more significant determinant of where sales occur than does income. The ratio of sales rose 1.11 percent for every 1 percent increase in the per capita income ratio.

When evaluated in terms of the 1982 relative sales ratio, the results show that sales occurring in Montgomery County would decline by 3.56 percent from a 1 percent sales tax rate increase. Put another way, a one-cent increase in the combined state and local sales tax rate would have reduced sales in Montgomery County by $13.2 million in 1982 (see Table 1). The local rate was found to have no effect.

Kentucky's relative income tax revenue is included as a variable because the income tax can be reflected in higher labor costs for Kentucky firms. Consequently, these firms can be expected to respond by raising prices. Higher prices, in turn, will lower relative sales in Kentucky. It was found that a 1 percent increase in the relative Kentucky income tax would lead to a

0.04 percent increase in Montgomery County's sales, or a $139,100 increase in sales in 1982.

One important point to observe is that the relative sales in Tennessee declined with the state sales tax rate increase in 1976, but, particularly beginning in 1980, sales rose to a higher level than prior to the increase. The possibility was examined that only a temporary change in relative sales occurred as a response to the tax rate change. However, no such evidence could be found. It is likely that Montgomery County's relative sales would have been even higher if the Tennessee sales tax rate had not been increased.

The analysis of the individual sales categories generally follows expectations. The state and local sales tax rate led to statistically significant declines in sales for each category, with the greatest decline for the largest ticket item, furniture.

A decline in auto sales was the largest surprise. Sales tax rate increases were not expected to offset auto sales, since consumers must pay the tax when their automobiles are registered in Tennessee regardless of where the automobile is purchased. One possible explanation is that Tennessee consumers are purchasing cars in Kentucky and illegally registering them there. Another possibility is that as the sales tax rate rises, consumers are shifting auto repair services – where the tax differential would exist – to Kentucky dealers.

The percentage of Kentucky's revenues generated from the income tax was statistically significant for three categories of sales: automobiles, food for home consumption, and food for consumption away from home.

Travel costs, measured by real automobile costs per mile, were statistically significant in the furniture equation, indicating that Tennesseans reduce their movement to Kentucky for furniture purchases as the cost of travel rises. This result is expected because the total cost of an item purchased in Kentucky includes the travel cost and the purchase price.

Annual Sales. Total taxable sales data from 1965 through 1982 were used to make estimates similar to those reported for quarterly data. The results are generally supportive of those found when quarterly data are employed. The relative state and local sales tax rate is statistically significant, indicating that rises in the Tennessee rate reduce relative sales in Montgomery County. The longer time period of data used in this equation encompasses a period during which two state sales tax rate increases and one local sales tax rate increase occurred in Tennessee, and one occurred in Kentucky. The effect of these tax rate increases on sales has generally been smaller than the experiences of 1976 and 1979, as measured by the quarterly sales analysis. The experience of the four tax increases over the longer time period indicates that a 1 percent rise in the Tennessee sales tax rate in 1982 would have reduced Montgomery County sales by only $9.6 million compared to $13.2 million, using the quarterly data.

As was found with the quarterly data, increases in relative Kentucky income tax revenues increase sales in Montgomery County. However, these increases were found to be less when the analysis was conducted over the longer time period. A 1 percent increase in the Kentucky relative income tax revenues (0.19 percent of revenues) would have caused a 0.014 percent increase in Montgomery County's 1982 sales. This is less than half the effect observed when the shorter time period was studied.

Employment. The demand for labor is created by the demand for goods and services. Thus, the number of workers employed is determined by the same factors that lead to sales. The authors' analysis found that a one-cent rise in the Tennessee sales tax rate during 1982 would have reduced employment in Montgomery County by

TABLE 1

THE EFFECT THAT A 1 PERCENT SALES TAX RATE INCREASE WOULD HAVE HAD ON SALES IF THE INCREASE HAD BEEN ENACTED FOR CALENDAR YEAR 1982*

	Montgomery County, Tennessee	
Taxable Sales Category	Percent Change	Dollar Change
Total	-3.562	-13,178,600
Furniture	-7.536	-766,691
Auto	-5.220	-1,808,300
Food at Home	-2.449	-1,817,190
Apparel	-0.549	-99,465
Food Away from Home	-4.187	-1,396,080
Average Tax Rates 1974.3 to 1982.2	6.078%	

*Estimates based on the effects of the 1976 state sales tax rate and 1979 Montgomery County local option sales tax rate increases.

2.98 percent or approximately 132 jobs. The percentage of jobs which would be lost is very similar to the 2.67 percent of sales which the annual data series indicates would be lost from a 1 percent increase in the tax rate.

The cigarette tax rate, which was not found to affect sales, does appear to have a small influence on employment. A 1 percent increase in the Tennessee cigarette tax during 1982 would have reduced Montgomery County retail trade employment by 0.055 percent, or two jobs. A 1 percent increase in the Tennessee cigarette tax in 1982 would have reduced nonfarm private employment by 0.065 percent, or 11 jobs.

Results of the Tri-Cities MSA Statistical Analysis

When comparable equations to those estimated for Clarksville-Hopkinsville were estimated for the Tri-Cities MSA, the same pattern of results was found.

Quarterly Sales. The authors selected Sullivan and Washington Counties in Tennessee along with Washington County and the independent city, Bristol City, in Virginia as the most populated portions of the Tri-Cities MSA, for purposes of the study.

The combined state and local sales tax rate was found to have a statistically significant, negative coefficient for every subcategory of sales and for total sales. The statistical results show that the largest effect on sales is for the bigger ticket items, furniture and apparel (Table 2). A lesser effect was found for food purchased for consumption at home and food purchased for consumption away from home. Overall, a 1 percent increase in the Tennessee sales tax rate was found to reduce sales in Sullivan and Washington Counties, Tennessee, by about 1 percent. If a 1 percent increase in the Tennessee rate had been in force during 1982, the Tennessee counties could have expected to lose $14.37 million in taxable sales.

No evidence was found that any other taxes affected the location of sales. Neither the cigarette nor the income tax differences were found to have a statistically significant effect on

A HEAVY RELIANCE ON CONSUMPTION TAXES

Consumption taxes, including the general sales and the selective sales, comprised 75.9 percent of Tennessee own-source tax revenues in 1983 (Figure 2). Only 2.3 percent of Tennessee government revenues came from an individual income tax. Each percentage is much different from that of the average state in the U.S. In the case of most states, consumption taxes are much lower and income taxes are much higher. Kentucky, for example, which has a more balanced revenue structure, raises 45.5 percent of its own-source revenues from consumption taxes and 24.1 percent from the income tax.

The tax structure differences can be exacerbated by Tennessee local taxes. For example, in Montgomery County, Tennessee (Clarksville), the local government generates 28.0 percent of its own-source revenues from consumption taxes. Despite the differences in the two states' respective tax structures, per capita own-source revenues are much higher in Kentucky, as well as in the average state, than in Tennessee, meaning the total tax burden is generally higher for Kentucky residents and businesses than for their counterparts in Tennessee.

FIGURE 2

PERCENTAGE DISTRIBUTION OF STATE GOVERNMENT TAX COLLECTIONS TENNESSEE AND UNITED STATES, 1983

where sales occur. The only cigarette tax rate changes that occurred during the quarterly data study period were in Bristol City, Virginia, so low rates could still be found by shopping in Washington County, Virginia.

Annual Sales. As was seen in the Clarksville-Hopkinsville area, the combined state and local sales tax rate is again found to affect the location of sales in an inverse fashion. A study of sales patterns over the longer time period reveals that a 1 percent increase in Tennessee's sales tax rate reduces taxable sales by 0.508 percent. In 1982 this would have meant that sales on the Tennessee side of the border would have been reduced by $7.158 million if a 1 percent rate increase had been enacted. As with the Clarksville-Hopkinsville area, the effect of sales tax increases on location of retail activity was found to be smaller when rate changes were studied over the longer time period. This is evidence that the effects on sales of earlier tax rate increases were smaller in magnitude than the more recent changes. This probably occurs because recent increases are creating a growing tax rate disparity, and this disparity increases the incentive to cross the state line for shopping.

Increases in the sales tax rate were found to reduce the relative amount of retail trade employment on the side of the border that experienced the rate increase. A 1 percent increase in Tennessee's sales tax rate would cause a 1.374 percent reduction in Washington and Sullivan Counties retail trade employment, or a loss of 235 jobs.

The sales tax ratio had a negative coefficient when total employment was studied, which indicates that an increase in the sales tax rate reduces relative employment on that side of the border. The elasticity is somewhat smaller than for retail employment. Nevertheless, it indicates that a 1 percent Tennessee rate increase would reduce employment in Sullivan and Washington Counties by 1.051 percent, or 954 jobs. The greatest effect of tax differentials was expected to be on retail trade employment, but the tax would also be incident on sales arising from some wholesale trade, services, and manufacturing activity. Cigarette tax rate increases were also found to reduce employment slightly. A 1 percent increase in the Tennessee rate would lead to a 0.036 percent reduction in employment, or a loss of 33 jobs.

TABLE 2

SELECTED STATE AND LOCAL TAX RATES INCIDENT IN SULLIVAN AND WASHINGTON COUNTIES, TENNESSEE, AND BRISTOL CITY AND WASHINGTON COUNTY, VIRGINIA, SINCE 1965

Sales Tax Rates[1]	
Tennessee	3.0% • 1/72; 3.5% • 4/76; 4.5% • 4/84; 5.5% • Present
Sullivan County	None • 6/66; 1.0% • 1/73; 1.5% • Present
Washington County	None • 8/67; 1.0% • 10/75; 1.5% • 12/81; 2.25% • Present
Virginia	4.0% • Present
Cigarette Tax Rates[1,2]	
Tennessee	7¢ • 6/67; 8¢ • 6/69; 13¢ • Present
Virginia	2.5¢ • Present
Bristol City	None • 7/69; 2¢ • 7/78; 3¢ • 7/81; 4¢ • Present
Alcohol Tax Rates[3]	
Tennessee	$2.50 • 6/67; $4.00 • Present
Virginia[4]	None • Present
Income Tax Rates	
Tennessee	Hall's Income Tax on dividends and interest
Virginia	First $3,000, 2% to $5,000 and over, 5% • 1972; First $3,000, 2% to $12,000 and over, 5.75% • Present

Note: • indicates rate in effect until month/year.

1. State and local option tax rates listed separately.
2. Tax per pack of cigarettes.
3. Tax per gallon of distilled spirits.
4. Liquor stores are state-owned.

Results of the Chattanooga MSA Statistical Analysis

Retail trade and private nonfarm employment were studied for the Chattanooga MSA. However, sales patterns were not examined for this area because sales data for the Georgia counties were not available for a sufficient time period.

The Chattanooga MSA has three Tennessee counties and three Georgia counties. Hamilton County in Tennessee and Catoosa, Dade, and Walker Counties in Georgia were used in the analysis.

The results indicate that a 1 percent increase in the ratio of total personal income leads to a 1.599 percent rise in the retail trade employment ratio. A 1 percent increase in Tennessee's sales tax rate will cause a 1.180 percent decline in Hamilton County's retail trade employment, or a loss of 282 jobs. A 1 percent increase in the Tennessee alcohol tax rate is estimated to cause a 0.037 percent loss in retail trade jobs, which would translate into a loss of nine positions. The statistics show evidence that a 1 percent increase in the sales tax rate will reduce Hamilton

County's total private nonfarm employment by 0.596 percent, or 704 jobs.

Two other fiscal variables were also statistically significant. Rises in the alcohol tax rate on one side of the border were found to increase relative employment on the other side. The results indicate that a 1 percent increase in the Tennessee rate would cause a 0.026 percent loss in employment, or a loss of 31 jobs. Increases in the portion of Georgia's revenues financed with the general income tax were associated with higher employment in Hamilton County, Tennessee, presumably as relative labor costs rose. The gain in Tennessee from a 1 percent increase in the relative use of the Georgia income tax revenues is 0.021 percent, or 25 jobs.

Obion County, Tennessee/Fulton County, Kentucky

The sensitivity of rural sales patterns to sales tax rate changes was investigated for the Obion County, Tennessee/Fulton County, Kentucky, area. These counties were chosen for study because of the large tax rate differentials that exist between them and because there is a belief among many people that tax rates have caused a shift in sales patterns, particularly for food products.

Rural areas are more difficult to study than urbanized places because travel distances are generally greater if alternative shopping locations are to be considered by consumers. Also, the possibility for change in shopping patterns is more limited because new business locations will be discrete rather than continuous events. Because of these factors, the results of this analysis should be accepted with caution.

For relative sales for the two-county area, it was found that a 1 percent increase in relative personal income will lead to approximately a 1 percent increase in relative sales.

The relative sales tax rate is a statistically significant determinant of the relative sales pattern, again indicating that a rate increase would cause a decrease on that side of the border. If a 1 percent increase had been enacted for 1982, Obion County would have lost 1.500 percent of its sales, or $2.107 million.

Many merchants believe the largest effects of tax differentials result from beer and cigarette sales.

INTERVIEW ANALYSIS

To insure that the conclusions regarding the effect of taxes on economic activity were not totally the result of statistical techniques, on-site interview evidence was sought from businessmen and local leaders in five localities: Bristol, Byrdstown, Chattanooga, Clarksville, and Union City.

Overall, the response of those interviewed was that tax differentials do influence business activity, but in many instances the influence is slight when compared to other influences. Furthermore, tax differentials have existed for such a long time that those interviewed were hard pressed to provide dramatic instances of response to them, especially to only small changes in those differentials. This observation supports the statistical findings that indicate tax differences have a measurable, but nondramatic influence on sales patterns.

The interviewing approach was relatively unstructured; that is, no formal questionnaire or statistical sampling technique was employed in the interviews. Although all views expressed are important, some of those interviewed may not have been objective because of concern that public knowledge of their opinions might encourage a shift in sales. In addition, after observing conditions in the communities studied for several days, the authors found that their most important initial impressions were later validated in the interviews.

Consumption Tax Effects

It should be noted that the interviews reported here were conducted in the spring and summer of 1984, during which time all of the areas in the sample were recovering from a recession. Nearly every merchant reported increases in sales compared to 1983 and 1982. In that situation, it was difficult for them to notice, much less worry about, sales loss due to tax differentials. None reported the loss of good customers, and none reported extensive complaints about tax differentials. While the authors' statistical analysis (covering many years) did show the small but clear effect of tax differentials, that effect (a 1-4 percent loss) is difficult for merchants to detect against the background of the 7-9 percent gain in sales they were experiencing. This situation accounts for the fact that our respondents claimed to be certain that there was such an effect, even though they were unable to state precisely what that effect was.

In general, there is evidence that Tennessee businesses have chosen to compete in terms of service, variety, and quality because the tax differences make it difficult to compete in terms of price. In many instances those who said the tax differential was no problem pointed out that they provided a larger selection of goods and were especially responsive to the special needs of their customers (e.g., responding to traditional dietary requests of foreign nationals).

In each city respondents were asked if they or persons they knew did general shopping at out-of-state sites. It is interesting that in every case respondents answered that they were unable to identify specific persons, but they had a strong sense that there were such people and that their shopping patterns hurt local businesses.

Not much was made of the tax differential by the larger stores in either Bristol or Chattanooga, because they generally have outlets in both states. These stores advertise all of their

There is evidence that Tennessee businesses have chosen to compete in terms of service, variety, and quality, because tax differences make it difficult to compete in terms of price.

outlets in common ads in the dominant newspapers and on TV and radio. Prices tend to be uniform within any chain in a metropolitan area, meaning that consumers can save the tax difference by shifting their consumption purchases to the low tax state.

Both Bristol and Chattanooga are urbanized areas where the state line is hardly recognized. In Bristol one respondent said that he had long ago opted to market his service (real estate) in both towns, since even together, they are relatively small. Separately, neither is large enough to support a reasonably sized business.

On a smaller scale, Fulton, Kentucky, and South Fulton, Tennessee, are also a single community with a single chamber of commerce. Almost all the retail activity is in Fulton, Kentucky. The manager of a grocery store in Fulton said it would be madness to open one in South Fulton, where there are no grocery stores, since a combination of aggressive pricing and tax differentials would mean a gross price difference of 10 percent. Retail stores in South Fulton depend on high quality merchandise and service (ladies' clothing) or convenience (a convenience mart). Thus, they are able to compete in areas other than price, but seem unable to compete on a broad scale.

A grocer in Union City stated that his Tennessee stores had lost 15 percent of sales, and his Kentucky store had gained 30 percent since the 1984 change in the Tennessee sales tax rate. In all other cities (Bristol, Byrdstown, Chattanooga, Clarksville) there were equal numbers of people who argued that the change had affected or not affected sales.

Furniture dealers in Tennessee were interviewed to determine the impact of tax differentials on the sales of "big-ticket" items. None of these dealers felt they had lost significant amounts of business due to tax differentials because they had adopted several strategies to attract out-of-state business. One collected sales taxes based on the state of residence of the customer. Another negotiated the price if a "big-ticket" item (e.g., a TV) was taken home by the customer. Savings to the store on delivery charges could be used by the customer to negotiate reduced prices. Nonetheless, these individuals were unable to judge the lost sales, as Tennesseans go to other states to shop.

Many merchants believed the largest and most readily observed effects result from beer and cigarette sales. In both Virginia and Kentucky, grocery stores and convenience markets stock five to ten times the number of cigarettes as Tennessee stores. Wholesalers reported that this difference – so noticeable at the border – grows less as one moves away from the border, though it is still noticeable 50 to 100 miles away. A similar situation is reported for beer sales, since retailers sense that people travel outside Tennessee to make purchases.

Respondents thought that the difference in cigarette sales does not carry over significantly to other sales. Convenience stores in similar trade areas in different states handle roughly the same volume of candies and incidentals, even if the disparity in cigarette sales is large. The difference in cigarette sales appears attributable to persons who cross the state line to buy several cartons at a time.

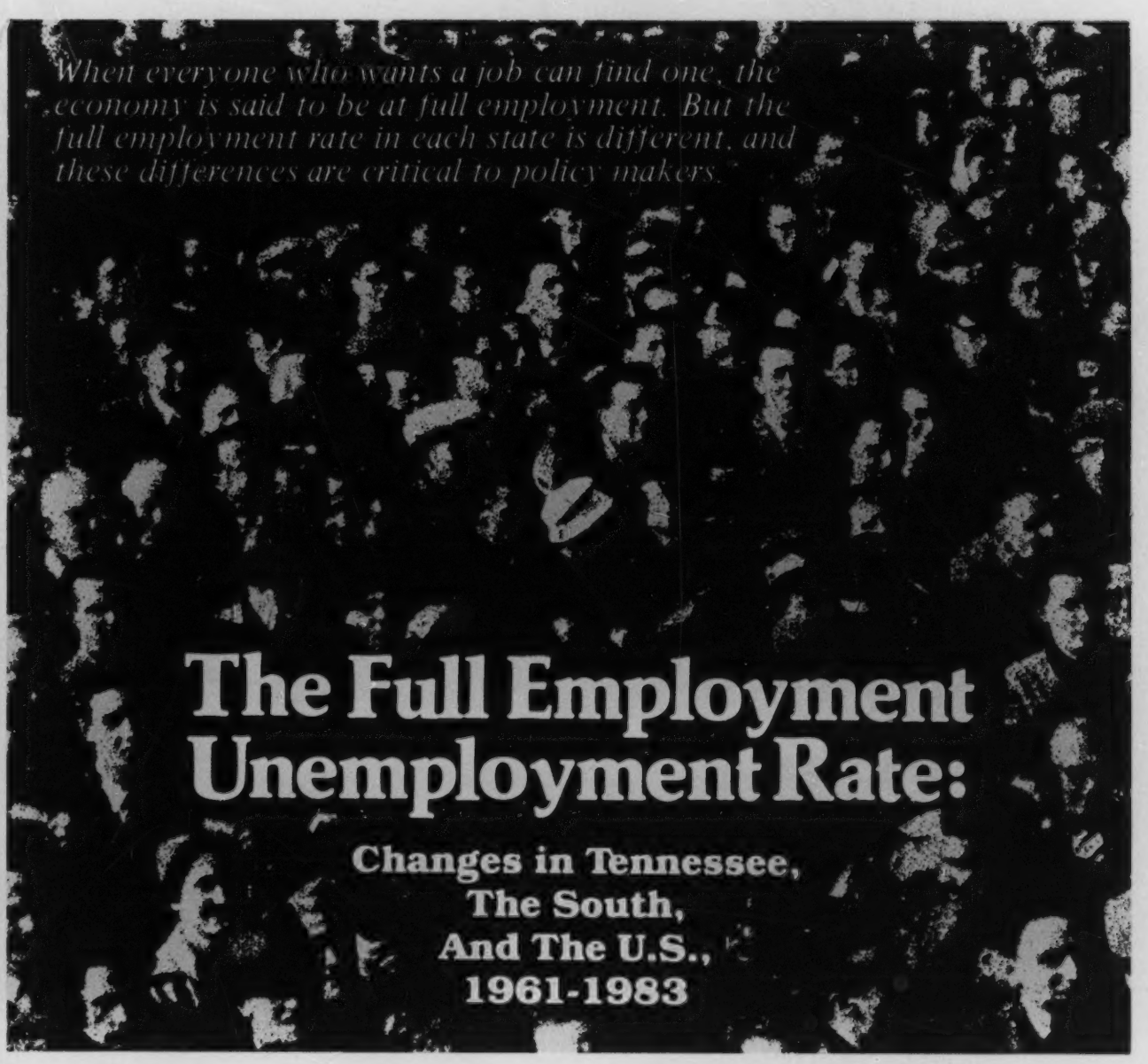
One cigarette wholesaler pointed out that increased tax rates do not always generate increased tax revenue. In Virginia, the city of Bristol raised cigarette taxes. The surrounding county, Washington, did not have the option to tax cigarettes locally. As a result, the wholesaler reported that sales have flourished in the county, and the city has a smaller tax revenue than it had before the last tax increase.

Income Tax Effects

Kentucky, Virginia, and Georgia all have state income taxes. Thus, the differential favors Tennessee in this case. In general, the income tax is paid in the other state if a person either lives or works in that state. The income taxes are avoided only if a person lives and works in Tennessee.

The tax advantage for Tennesseans is particularly large for persons with high incomes. For example, in Bristol a respondent reported that most physicians live in Tennessee and maintain offices in Tennessee to limit their liability for Virginia income taxes. One person who manages a large firm in Bristol, Virginia, lives in Tennessee and has his employer certify that one-half of his income is from business generated in Tennessee. This exempts half of his income from Virginia income taxes.

Both the statistical and interview analyses support the finding that high consumption taxes in Tennessee are distorting the location of employment and retail sales. As a result of the sales loss, Tennessee state government loses tax revenues as well. Income taxes in the surrounding states slightly offset the losses caused by the consumption tax differentials. ■



When everyone who wants a job can find one, the economy is said to be at full employment. But the full employment rate in each state is different, and these differences are critical to policy makers.

The Full Employment Unemployment Rate:

Changes in Tennessee, The South, And The U.S., 1961-1983

Kevin R. Murphy

Recently the Center for Business and Economic Research undertook an investigation designed to determine the degree of secular change in Tennessee's full employment unemployment rate (FEUR) during the 1960-1983 period. The FEUR is that rate of unemployment at which everyone who wishes to have a job can find one at the going wage rate.

This article reports some of the findings of that study. Among the factors discussed are a comparison of the time pattern of Tennessee's FEUR with that of other states in the South and with that of the nation in general as well as a consideration of the factors important in accounting for the rise in Tennessee's FEUR between 1961 and 1982. Estimates reveal a three-percentage-point rise in Tennessee's FEUR from 4.6 percent in 1961 to 7.6 percent in 1983. This is contrasted with only a one-percentage-point estimated average increase in FEUR in the other 49 states, from 5.3 percent in 1961 to 6.3 percent in 1983.

This begs the question why the change in Tennessee's FEUR has differed from changes in other states in the South and in the nation in general. Before answering this question, however, it is important to understand what factors may cause the FEUR to change.

Economic Determinants of a State's FEUR

Knowing what factors determine the FEUR and in turn cause it to change is as important as knowing its current level. This is because knowledge of the

FEUR's determining factors will tell us why it changes over time and how the rate might be altered for policy purposes. The economic determinants of the FEUR are usefully captured by the following set of economic and demographic factors:

Relative Wages. Wages paid by employers in one state relative to those paid elsewhere help determine the FEUR in several ways. Higher wages paid in a state not only will entice more people to look for work there, they also lead to a higher number of layoffs in a state as employers reduce their demand for labor. Both of these effects raise the unemployment rate. Higher wages, however, also reduce the quit rate, thus counterbalancing the effects of layoffs somewhat.

Transfer Payments. Transfer payments in a state have an impact on the state's FEUR. These are payments made by a branch of government (federal, state, or local) to individuals. Such payments include social security income, disability income, aid to families with dependent children, food stamps, unemployment insurance benefits, and the like. Some transfer programs (specifically aid to families with dependent children and food stamps) require that a recipient register with the employment security agency of the state of residence as being willing and available to work. The recipient may be counted as unemployed depending upon whether he is included in the agency's list. But this reporting is not the key effect that transfer payments have on increasing unemployment rates. An increase in benefits paid out under these programs increases their attractiveness to potential recipients, thus expanding both the pool of people receiving benefits and the number of people unemployed.

Demographic Structure. The demographic structure of a state is also important in determining its FEUR. Some groups have much higher average unemployment rates than others. The greater the proportion of a given high unemployment rate group in a state's population, the higher should its FEUR be. For example, the April 1981 issue of the *Monthly Labor Review* reports

The FEUR: An Explanation

When economists speak of the full employment unemployment rate (or FEUR) they are talking about that unemployment rate at which labor demand and labor supply are approximately in balance. When the FEUR is reached, there are enough jobs in the economy so that every person who wishes to work can find work. In this regard, the FEUR must be distinguished from the unemployment rate statistics commonly reported by government agencies and the media. Both tend to report the unemployment that exists because there are not enough jobs in the economy in addition to the unemployment that would exist even if the labor market were in balance.

Knowing the correct FEUR is important because it gives the policymaker a clear benchmark by which job policies may be guided. If the unemployment rate is above the FEUR, then unemployment may be attacked through policies such as job creation programs and through fiscal and monetary policy designed to increase the general level of demand for goods and services in the economy. By contrast, if the unemployment rate is at or below the FEUR, then further reductions in the unemployment rate can be obtained only by shifting the focus of policy. Because there exist enough jobs in the economy to go around when the unemployment rate is in this range, we say that those unemployed, in some sense, are without work for voluntary reasons.

One component of unemployment that exists when the economy is at its FEUR is known as "frictional" unemployment. Those people who are frictionally unemployed are believed to be out of work by their own choice. In some cases the frictionally unemployed may be looking for work, refusing certain offers in the hopes of finding a job that will provide the highest overall level of compensation. Such persons would be expected to stop searching for a job when the additional cost of their search outweighs the additional benefits that might be gained from it.

The other major component of unemployment when the unemployment rate is at the FEUR is known as "structural" unemployment. Structural unemployment occurs because the economy is in a continual state of change. Because of shifting consumer tastes, continuing technological improvements, and increasing competition from foreign producers, some industries will expand while others decline. When industries decline, workers are involuntarily laid off. Nevertheless, such unemployment is voluntary in the sense that jobs for these persons do exist elsewhere in the economy. The problem is that filling these jobs often involves either a substantial investment in new training on the part of the worker, or a long-distance move, or both.

The policies appropriate for reducing frictional and structural unemployment are very different from those policies used to combat unemployment that stems from a simple lack of jobs. For example, frictional unemployment may be reduced through policies designed to improve the flow of information regarding job vacancies to people looking for work. Structural unemployment likewise may be reduced through policies that improve the flow of information, and also by policies that subsidize the re-training of laid-off workers, or that help attract new industries to a depressed area.

It is important to examine the degree of change in FEUR by state, because each state differs tremendously in terms of its economic and demographic makeup. Estimates of the FEUR at the national level are only averages of what is going on in individual states. Consequently, states experience very different changes in FEUR over time, and policymakers should be aware of these differences.

that the teenage unemployment rate was 17.7 percent in 1980, while the rate for persons over 20 was only 5.9 percent, that females over the age of 20 in that same year had an unemployment rate of 6.3 percent, and non-whites had an employment rate of 13.2 percent.

The reasons for these varying demographic unemployment rates are diverse. Teenagers' unemployment rates are higher because teenagers are at a point in life where job and familial responsibilities are not well established. They often see jobs as only a temporary way of earning spending money. Females tend to have relatively higher unemployment rates because their attachment to the labor market is not generally as strong as that of males. This is because males typically divide their time between only two activities--work in the labor market and leisure consumption. Women traditionally have divided their time between three activities--work in the labor market, work in the home (including child rearing), and leisure consumption. Thus, their commitment to labor market work is not as strong as is the case with males.

Non-whites have a high unemployment rate for several reasons. Stephen Marston in a 1976 paper for the Brookings Institute writes that non-whites have a significantly higher probability of being laid off than do whites, and that once unemployed, non-whites have a significantly more difficult time becoming re-employed. Discrimination, to an extent, may also play a role. And one leading theory suggests that firms offering stable jobs tend to be located outside central city areas, where many minorities make their homes. Central cities tend to have high percentages of unstable nonmanufacturing and construction jobs.

Industrial Structure. Industrial structure also plays a fundamental role in determining the state's FEUR. Different industries have different rates of unemployment, ranging from a low of 2.8 percent in the government sector to a high of 11.1 percent in the construction industry.

The higher the fraction of employment in a state concentrated in high unemployment industries, the higher should the state's FEUR be, and vice versa.

Labor Market Imperfection. The degree of labor market imperfection in a state also helps determine its FEUR. A labor market imperfection, in this context, is any constraint on the wage rate which prevents it from fully adjusting to equate labor supply and labor demand. Two very important sources of labor market imperfections are minimum wage laws and unionization.

The minimum wage can be a cause of unemployment. Minimum wage laws now cover 85 percent of the non-supervisory labor force write Ronald Ehrenberg and Robert Smith in their book, *Modern Labor Economics*. The non-covered sector is so small that it cannot possibly absorb all of the workers unable to find employment in the higher wage covered sector. Thus, the greater the degree of coverage of the minimum wage, the higher the FEUR should be, all else equal.

Unionization acts upon the labor market in much the same way as the minimum wage. Unions strive to raise the wage of their constituents above the level that would be set by the forces of supply and demand. But in doing so, they reduce employer demand for labor, and as a result, some workers become unemployed. The existing empirical evidence indicates that the larger the unionized sector, the more pronounced the threat effect is. Thus, the relationship between level of unionization and the FEUR should be direct.

Net Migration. Finally, net migration to a state will help determine its FEUR. Migration changes the composition of an area's labor force. People are three times as likely to migrate to an area with a job already in hand, John Lansing and Eva Mueller found in their 1967 published study: *The Geographic Mobility of Labor*. The expected relationship between net migration and the FEUR is, therefore, negative.

Full Employment Unemployment Rate Estimates: 1961-1983

Table 1 lists Tennessee's estimated FEUR for the last 23 years. These estimates were derived using a mathematical model which though simple in its construction was extremely powerful in its explanatory ability. For purposes of comparison, the table also presents the labor force weighted average full employment unemployment rate for states in the East South Central region (excluding Tennessee), in the West South Central region, in the South Atlantic region, in the South (excluding Tennessee), and in the entire nation.

Table 1 reveals interesting patterns both regionally and for the U.S. as a whole. Tennessee's FEUR experiences the sharpest increase of the areas listed, rising by three full percentage points during the period studied. A similar pattern is revealed for the other three states in the East South Central region between 1961-1983. Though this pattern is not as pronounced, it suggests that the underlying economic phenomena that drove Tennessee's FEUR up over time were also at work in Alabama, Kentucky, and Mississippi. Other states in the South fare much better than the East South Central states during the period. The average FEUR fell by a percentage point in both the West South Central states (Arkansas, Louisiana, Oklahoma, and Texas) and in the South Atlantic states (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia).

In the U.S. as a whole, the FEUR increased by a percentage point during the period, from 5.3 percent to 6.3 percent. Early in the period we find Tennessee's estimated FEUR a half percentage point below the national mark. But by 1974, Tennessee's FEUR is a half percentage point above the national FEUR. In 1983 the model estimates indicate that Tennessee's FEUR was above the national level by more than a full percentage point. This finding suggests that the FEUR, which includes frictional and structural levels of unemployment, is reached in Tennessee at a rate of unemployment much higher than is typically the case in other states.

Table 2 compares Tennessee's full

employment unemployment rate with its actual unemployment rate during the 1961-1983 period and makes a similar comparison for the entire U.S. Columns 3 and 6 of the table indicate respectively how close to full employment the Tennessee economy and the U.S. economy were during each year of the period studied. Data in column 3 reveals that the Tennessee economy was at full employment (or better than full employment) from 1966 to 1969, from 1972 to 1974, and from 1976 to 1980. The table also indicates that from 1981 to 1983 the Tennessee economy was far from full employment levels, which is entirely understandable, given the severity of the most recent national recession.

But Table 2 suggests a somewhat different pattern for the U.S. The national economy was at full employment for virtually the entire 1964-1974 period. Since this period, however, the U.S. has been at less than full employment with the exception of 1978 and 1979. Furthermore, Table 2 indicates that in 1982 and 1983, the national economy was further from full employment than at any other point during the period studied. Thus, in the latter 1970s, Tennessee fared somewhat better than the typical state in achieving the goal of full employment. However, the performance of the Tennessee economy in attaining this goal has not been markedly different from other states in the 1980s.

The empirical results reported here do not tell us why the Tennessee FEUR is above the national average and above the average FEUR of other states in the South. Nor do the results tell us why the rate of increase in the Tennessee FEUR has been so sharp relative to that found in other states or if this trend will likely disappear in the future.

TABLE 1

ESTIMATED FULL EMPLOYMENT UNEMPLOYMENT RATE: 1961-1983, FOR TENNESSEE, VARIOUS REGIONS, AND THE NATION

Year	Tennessee	East South[1] Central	West South[2] Central	South[3] Atlantic	South[4]	U.S.
1961	4.6	5.5	5.7	6.1	5.9	5.3
1962	4.8	5.6	5.7	6.0	5.8	5.3
1963	4.9	5.7	5.6	6.0	5.8	5.4
1964	5.0	5.8	5.6	5.9	5.8	5.4
1965	5.2	5.8	5.5	5.9	5.8	5.5
1966	5.3	5.9	5.5	5.8	5.7	5.5
1967	5.4	6.0	5.5	5.8	5.7	5.6
1968	5.6	6.1	5.4	5.7	5.7	5.6
1969	5.7	6.2	5.4	5.7	5.7	5.6
1970	5.8	6.3	5.4	5.7	5.7	5.7
1971	6.0	6.4	5.3	5.6	5.6	5.7
1972	6.1	6.5	5.3	5.6	5.6	5.8
1973	6.2	6.6	5.3	5.5	5.6	5.8
1974	6.4	6.6	5.2	5.5	5.6	5.9
1975	6.5	6.7	5.2	5.4	5.5	6.0
1976	6.6	6.8	5.1	5.4	5.5	6.0
1977	6.8	6.9	5.1	5.3	5.5	6.0
1978	6.9	7.0	5.1	5.3	5.5	6.1
1979	7.0	7.1	5.0	5.3	5.4	6.1
1980	7.2	7.2	5.0	5.2	5.4	6.1
1981	7.3	7.2	5.0	5.2	5.4	6.2
1982	7.4	7.5	4.9	5.1	5.3	6.2
1983	7.6	7.5	4.8	5.1	5.3	6.3

1. East South Central – Alabama, Kentucky, Mississippi
2. West South Central – Arkansas, Louisiana, Oklahoma, Texas
3. South Atlantic – Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia
4. South – states in East South Central, West South Central, and the South Atlantic regions (excluding Tennessee).

Explaining the Change in Tennessee's FEUR

To understand the economic factors that have caused the change in Tennessee's FEUR over time one must consider again the variables that determine a state's FEUR: relative wage, transfer payments, demographic composition, industrial composition, market imperfections, and net migration.

Since growth in Tennessee's FEUR was much stronger than was typically the case in the other 49 states during the period under study, we would anticipate growth in variables expected to raise the FEUR to be much stronger in Tennessee than elsewhere. Empirical evidence as well as the author's analysis

generally bears out this expectation.

Growth in the relative wage in Tennessee was three times what it was in the rest of the nation. As noted previously, rising wages reduce employer demand for labor and draw more people into the labor force to look for work. Both effects tend to raise the unemployment rate.

Growth in two of the three demographic groups expected to be positively related to the FEUR was significantly stronger in Tennessee than elsewhere. Growth in the potential non-white labor force was a percentage point larger in Tennessee than in other states, and the female labor force grew by over half a percentage point more in Tennessee than elsewhere. Offsetting these two demographic trends somewhat was the actual decline in the potential teenage labor force that took place in Tennessee during the period. This suggests that the growth in Tennessee's FEUR cannot be attributed to the baby boom.

The level of unionization fell in both Tennessee and in the other 49 states during the period. Given the expectation that unionization and the FEUR are directly related, the implication is that these changes exerted a drag on growth in the FEUR in all states, including Tennessee. But the decline in union coverage in other states in the nation was typically three times as large as in Tennessee. Thus the drag on FEUR growth was much greater in other states than in Tennessee.

Change in Tennessee's industrial composition of employment between 1961 and 1982 differed from what occurred in the rest of the nation. Manufacturing's share of total employment, for example, fell throughout the nation. But the decline in Tennessee was significantly smaller than was typically the case elsewhere. Because manufacturing is an industry categorized by high unemployment, the drag on FEUR growth exerted by manufacturing's decline in Tennessee is smaller than elsewhere, on average. Growth in the service industry and in finance, insurance, and real estate – two low unemployment industries – took place at a much slower rate in Tennessee than in the rest of the nation.

In summary, the distinguishing differences between Tennessee and the rest of the U.S. during the period show much faster wage growth in Tennessee, faster growth in the potential non-white labor force and in the female labor force participation rate in Tennessee, a slower rate of decline in the level of unionization in Tennessee, a slower rate of decline in manufacturing employment in Tennessee, and slower rates of growth in the service industries and in the finance, insurance, and real estate industries in Tennessee.

Not surprisingly, Tennessee appears to behave like the 15 other states in the South in terms of the changes in variables studied, but it differs when compared with states in the rest of the

TABLE 2

COMPARISON OF FULL EMPLOYMENT RATE WITH ACTUAL UNEMPLOYMENT RATE TENNESSEE AND THE U.S.

Year	(1) Tennessee's FEUR	(2) Tennessee's Actual Unemployment Rate	(3) Ratio of (1) to (2)	(4) National FEUR	(5) National Unemployment Rate	(6) Ratio of (4) to (5)
1961	4.6	10.6	.43	5.3	6.7	.79
1962	4.8	8.3	.58	5.3	5.5	.96
1963	4.9	8.2	.60	5.4	5.7	.95
1964	5.0	6.8	.74	5.4	5.2	1.04
1965	5.2	5.6	.93	5.5	4.5	1.22
1966	5.3	4.4	1.20	5.5	3.8	1.45
1967	5.4	5.5	.98	5.6	3.8	1.47
1968	5.6	5.0	1.12	5.6	3.6	1.56
1969	5.7	4.8	1.19	5.6	3.5	1.6
1970	5.8	6.3	.92	5.7	4.9	1.16
1971	6.0	6.5	.92	5.7	5.9	.97
1972	6.1	4.7	1.30	5.8	5.6	1.04
1973	6.2	3.9	1.59	5.8	4.9	1.18
1974	6.4	5.1	1.25	5.9	5.6	1.05
1975	6.5	8.3	.78	6.0	8.5	.71
1976	6.6	6.0	1.10	6.0	7.7	.78
1977	6.8	6.3	1.08	6.0	7.1	.85
1978	6.9	5.8	1.19	6.1	6.1	1.00
1979	7.0	5.8	1.21	6.1	5.8	1.05
1980	7.2	7.2	1.00	6.1	7.1	.86
1981	7.3	9.1	.80	6.2	7.6	.82
1982	7.4	11.8	.63	6.2	9.7	.64
1983	7.6	11.5	.66	6.3	9.6	.66

TABLE 3

THE FULL EMPLOYMENT UNEMPLOYMENT RATE FOR THE 50 STATES
FOR THE YEARS 1961 AND 1983

State	1961	1983	State	1963	1983	State	1961	1983	State	1961	1983	State	1961	1983
Alabama	5.1	9.5	Hawaii	5.3	6.6	Massachusetts	5.0	6.6	New Mexico	7.9	7.0	South Dakota	2.6	4.1
Alaska	6.9	9.3	Idaho	3.9	7.3	Michigan	4.9	10.0	New York	8.0	5.5	Tennessee	4.6	7.6
Arizona	7.6	5.2	Illinois	2.4	7.9	Minnesota	3.9	4.8	North Carolina	5.9	4.8	Texas	5.8	4.0
Arkansas	6.0	6.4	Indiana	2.8	8.0	Mississippi	6.0	6.7	North Dakota	5.2	3.8	Utah	5.1	6.2
California	8.2	6.7	Iowa	1.8	5.0	Missouri	3.8	6.0	Ohio	6.1	6.9	Vermont	5.5	5.6
Colorado	5.3	5.0	Kansas	4.0	3.7	Montana	3.9	6.3	Oklahoma	4.1	4.2	Virginia	4.6	4.5
Connecticut	6.0	5.8	Kentucky	5.5	5.8	Nebraska	1.8	3.7	Oregon	5.7	8.0	Washington	7.1	7.8
Delaware	4.9	6.9	Louisiana	6.5	8.0	Nevada	7.0	6.1	Pennsylvania	5.6	6.9	West Virginia	11.7	6.1
Florida	6.7	5.0	Maine	6.5	6.3	New Hampshire	5.3	4.1	Rhode Island	4.9	6.2	Wisconsin	2.2	7.2
Georgia	4.8	5.1	Maryland	5.4	5.1	New Jersey	4.8	7.3	South Carolina	7.3	5.9	Wyoming	5.4	3.0

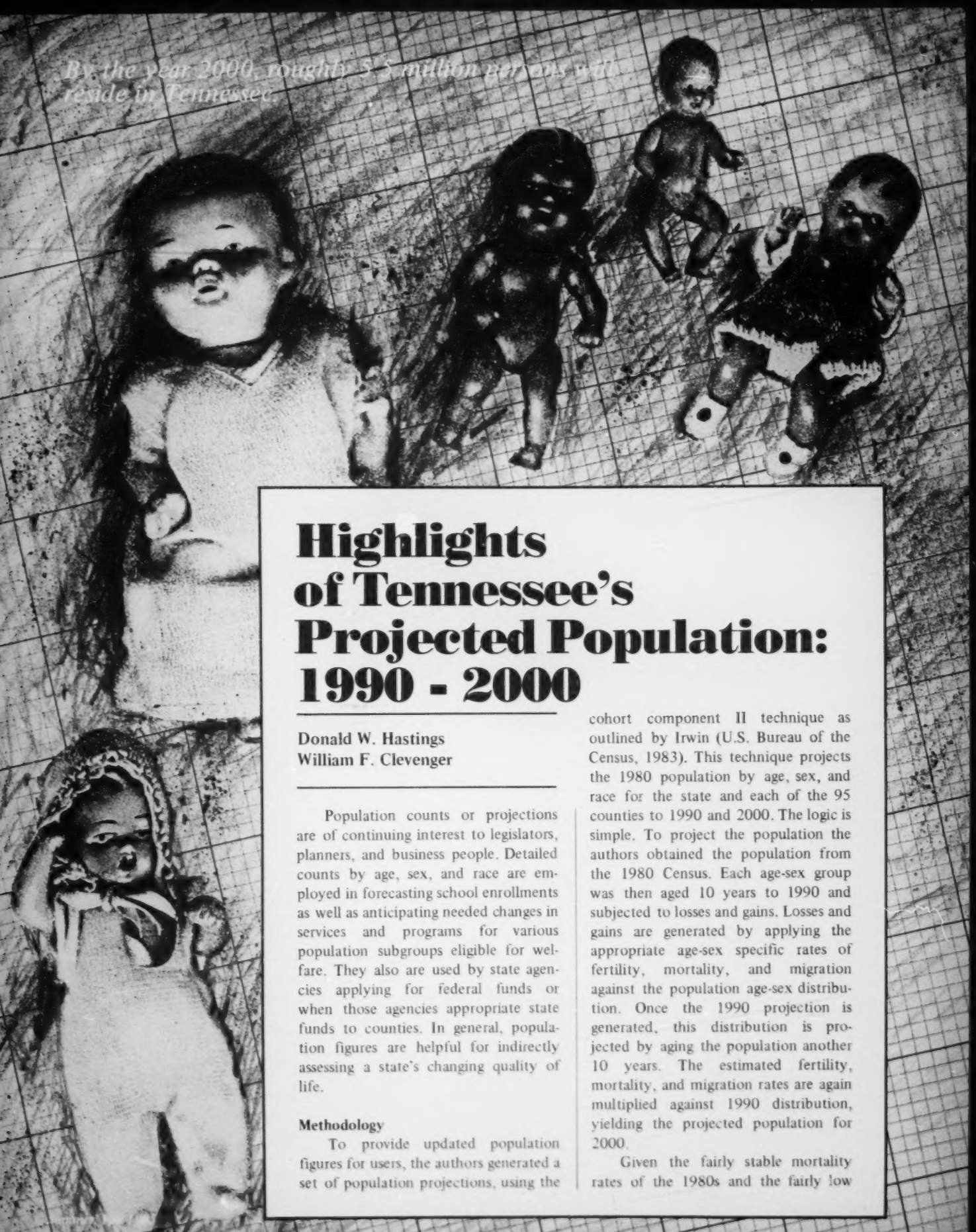
nation. Nevertheless, there are some clear-cut differences that can account for the dissimilarity in FEUR growth observed in Tennessee and in the South. For example, the non-white labor force declined slightly in the South, but increased by almost four percentage points in Tennessee. In addition, growth in employment in the wholesale and retail trade industry group – a high unemployment rate industry group – took place at a rate 70 percent faster in Tennessee than in the rest of the South. Finally, growth in finance, insurance, and real estate – a low unemployment rate industry group – occurred at a rate in the South more than double that observed in the state of Tennessee.

The factors that distinguish Tennessee from neighboring states in the East South Central Region – Alabama, Kentucky, and Mississippi are mainly demographic. It should be recalled that the average FEUR in the other states in the East South Central region grew two percentage points between 1961 and 1982 while Tennessee's grew three percentage points. The potential non-white labor force grew by 3.7 percentage points in Tennessee but declined by 2.5 percentage points on average in the other East South Central states. The potential teenage labor force declined both in Tennessee and in the other East South Central states, but the degree of decline was more than twice as great in the latter than in the former. And growth in the female labor force participation rate was a percentage point and a half larger in Tennessee than in other states in the East South Central region, though this difference is significant at only the 0.10 level. The single non-demographic factor distinguishing Tennessee from Alabama, Kentucky, and Mississippi that might have a positive impact on Tennessee's FEUR is the change in employment share of the wholesale and retail trade industry group that took place during the period. The wholesale and retail trade industry is categorized by high unemployment, and growth in employment in this sector was more than twice as large in Tennessee as in the other East South Central states.

Other Sources of Change in Tennessee's FEUR

The total increase in Tennessee's FEUR during this period was 3.0 percentage points. The regression model which related changes in determinants of the FEUR and changes in the FEUR can account for a little less than half of the total change during the period. Because the regression model is well specified, the remaining factors are difficult to quantify. It seems likely that a good part of the unexplained residual can be attributed to the structural unemployment discussed earlier. The 1970s witnessed a number of unusual shocks to the economy. The Arab oil embargoes and higher levels of foreign import competition are examples. Both caused severe dislocations in a number of major industries. The unemployment created by such shocks is voluntary in the sense that there exist enough jobs in the economy to absorb the additional unemployment. The problem is that the dislocated workers may have to retrain or actually move to a new area in order to find work. Both training and migration are costly. Thus, structural unemployment is hard to eliminate.

The industries most seriously affected by the aforementioned supply and demand shocks during the 1970s were in the manufacturing sector. In 1980 manufacturing's employment share in the typical state was 22.3 percent, but in Tennessee it was 29 percent, according to U.S. government figures. This indirect evidence suggests that Tennessee's structural unemployment problem was probably somewhat greater on the average. Unfortunately, it is impossible to quantify just how important structural unemployment was in causing Tennessee's FEUR to rise. ■



Highlights of Tennessee's Projected Population: 1990 - 2000

Donald W. Hastings
William F. Clevenger

Population counts or projections are of continuing interest to legislators, planners, and business people. Detailed counts by age, sex, and race are employed in forecasting school enrollments as well as anticipating needed changes in services and programs for various population subgroups eligible for welfare. They also are used by state agencies applying for federal funds or when those agencies appropriate state funds to counties. In general, population figures are helpful for indirectly assessing a state's changing quality of life.

Methodology

To provide updated population figures for users, the authors generated a set of population projections, using the cohort component II technique as outlined by Irwin (U.S. Bureau of the Census, 1983). This technique projects the 1980 population by age, sex, and race for the state and each of the 95 counties to 1990 and 2000. The logic is simple. To project the population the authors obtained the population from the 1980 Census. Each age-sex group was then aged 10 years to 1990 and subjected to losses and gains. Losses and gains are generated by applying the appropriate age-sex specific rates of fertility, mortality, and migration against the population age-sex distribution. Once the 1990 projection is generated, this distribution is projected by aging the population another 10 years. The estimated fertility, mortality, and migration rates are again multiplied against 1990 distribution, yielding the projected population for 2000.

Given the fairly stable mortality rates of the 1980s and the fairly low

A sluggish economy can effect population growth through migration, the component most sensitive to change in the economy.

and steady rates of fertility for the first half of this decade, internal migration becomes the most important component in projecting Tennessee's population growth. Tennessee, on the fringe of the sunbelt, was a destination of net in-migration from the snowbelt and return migrants between 1970 and 1980. However, the prosperity enjoyed by Tennesseans during the 1970s diminished in the first half of the 1980s. Like the rest of the country, Tennessee suffered during the 1982 recession and the economy has yet to fully rebound. A sluggish economy can affect population growth through migration, the component most sensitive to changes in the economy. Given the current economic indicators pointing to a recovery well below the prosperity levels of the 1970s, net migration is expected to decline from the strong in-migration of the 1970s, if not in fact reverse, or become negative.

Projection Migration Assumptions

Because of these slow-growth economic projections, the calculated net migration rates (NMRs) for 1970-80 were decreased by 70 percent. The results generated under this assumption yield a state population figure that for 1990, is within 1 percent of the total population value generated by the Center for Business and Economic Research using the Tennessee Econometric Model and as contained in the **1985 Economic Report to the Governor** (Tennessee State Planning Office, Nashville, November 1984).

The authors' data shown in Table 1 give population for 1980 and projections for 1990 and 2000.

The percent changes in population for the two decades were: 9.69 percent between 1980-90 and 8.80 percent between 1990-2000, (or intradecadal annual rates of percentage increase of .97 and .88 respectively). For the first decade the estimated percentage change for the state of 9.69 closely approximates the percentage of change of 10.20 reported by the U.S. Bureau of the Census (see Table 2).

Note that the projections reported here use the 1980 Census counts adjusted by age, sex, and race for under-

TABLE 1

POPULATION 1980, POPULATION PROJECTIONS 1990, 2000

1980 Population				1990 Population Projection				2000 Population Projection			
Age	Females	Males	Total	Age	Females	Males	Total	Age	Females	Males	Total
0 to 4	160,634	170,426	331,060	0 to 4	186,265	195,342	381,608	0 to 4	195,919	205,553	401,472
5 to 9	173,199	182,100	355,299	5 to 9	175,478	183,412	358,889	5 to 9	192,241	203,496	395,737
10 to 14	179,658	188,371	368,029	10 to 14	164,791	174,907	339,698	10 to 14	191,824	201,176	392,999
15 to 19	208,681	217,981	426,662	15 to 19	178,723	187,652	366,375	15 to 19	181,232	189,181	370,413
20 to 24	212,921	212,289	425,210	20 to 24	183,894	189,335	373,229	20 to 24	169,019	176,301	345,321
25 to 29	198,165	197,043	395,208	25 to 29	212,426	216,949	429,375	25 to 29	182,330	187,052	369,383
30 to 34	180,427	180,172	360,599	30 to 34	217,051	220,224	437,275	30 to 34	189,579	199,633	389,212
35 to 39	149,109	147,619	296,728	35 to 39	202,535	199,705	402,240	35 to 39	218,327	221,137	439,465
40 to 44	127,552	123,658	251,210	40 to 44	183,573	182,263	365,836	40 to 44	220,518	222,683	443,201
45 to 49	120,929	114,841	235,770	45 to 49	150,420	147,576	297,996	45 to 49	203,753	198,923	402,676
50 to 54	121,446	113,866	235,312	50 to 54	126,232	119,491	245,723	50 to 54	181,656	175,896	357,552
55 to 59	120,970	108,172	229,142	55 to 59	117,358	106,161	223,519	55 to 59	146,388	136,764	283,152
60 to 64	108,576	91,122	199,698	60 to 64	114,903	98,592	213,494	60 to 64	119,847	103,941	223,788
65 to 69	97,009	77,493	174,502	65 to 69	109,599	85,821	195,420	65 to 69	106,491	84,492	190,983
70 to 74	82,047	58,315	140,362	70 to 74	92,725	63,800	156,525	70 to 74	98,032	68,999	167,032
75 to 79	60,724	36,897	97,621	75 to 79	75,649	45,561	121,210	75 to 79	85,457	50,372	135,829
80 to 84	36,675	19,339	56,014	80 to 84	52,856	25,952	78,808	80 to 84	59,849	28,384	88,233
85 and Over	29,050	12,576	41,626	85 and Over	57,807	23,741	81,548	85 and Over	85,357	33,024	118,381
TOTAL	2,367,772	2,252,280	4,620,052	TOTAL	2,602,284	2,466,484	5,068,769	TOTAL	2,827,818	2,687,009	5,514,828

TABLE 2

PERCENTAGE CHANGES IN POPULATION GROWTH IN THE STATE, MSAs, CONTIGUOUS AND NON-CONTIGUOUS COUNTIES: 1980-1990 AND 1990-2000

	1980-90 Percent Change	1990-2000 Percent Change
State	9.69 (10.20)*	8.80 (6.84)*
MSAs	9.83	8.71
Contiguous	10.76	10.01
Non-Contiguous	8.07	7.75

*Estimated by U.S. Bureau of the Census. "Estimates of the Population of States by Age, July 1, 1981 to 1983," and "Provisional Projections of the Population of States by Age and Sex: 1980-2000." Current Population Reports P-25, No. 951 and 939. GPO. Washington, D.C., 1984 and 1983.

reporting instead of the 1980 Census actual counts (U.S. Bureau of the Census, 1983). There is a difference of 0.6 percent between the actual count 4,591,120 and the adjusted count 4,620,052. By 1984 the difference between the census estimate for the state population count and the interpolated figure is 1.7 percent. The census estimate is 4,717,000 and the interpolated figure is 4,799,540. (For a discussion of the methodology used by the Bureau, see U.S. Bureau of the Census, 1985.)

Population Growth

To display the relative shifts in population size across the counties in the state in an easily interpretable way, three categories were created: (1) Metropolitan Statistical Areas (MSAs), counties comprising the MSAs (excluding counties outside of Tennessee); (2) contiguous, counties contiguous to an MSA county; and, non-contiguous, the remainder of the counties.

In Table 2 percentages of projected population growth are reported for the state and each of these designations. The fastest growth areas will be the contiguous counties. The areas of slowest growth will be non-contiguous counties. In the intermediate position will be the MSAs or metropolitan areas. These patterns of rapid expansion of the contiguous counties, slow growth of the metro areas, and minimal growth in non-contiguous counties are an extension of the trends observed in the 1970s. The contiguous counties in general are the receiving areas for in-migrants from other contiguous counties outside of Tennessee, and represent higher levels of fertility. The magnitude of increase anticipated for the next two decades is less than that observed during the 1970s and in large part a by-product of the assumption of reduced net migration.

Population Composition

To present the projected shifts in population composition, selected demographic indicators which key on various age groups are reported. Table 3 displays these indicators.

Prior research has shown that the percent population under 5 years of age (%0-4) is an indirect measure of fertility (Bogue and Palmore, 1964; Tuchfeld, Guess, and Hastings, 1974) as well as a barometer of potential demands for goods and services by infants, toddlers, and youngsters. For the state, the %0-4 increases from 7.17 in 1980 to 7.53 in 1990, then decreases to 7.28 in 2000. The increase in 1990 reflects the changing age composition of the female population as the baby boom generation of mothers passes through the peak childbearing years. Technically, the general fertility rate (GFR) is multiplied against the female population of reproductive age to estimate the births that are added to the population. This same trend is noted for metropolitan, contiguous, and non-contiguous counties. Note that the contiguous counties which experience the fastest growth also expect the highest rates of fertility.

The percent of the population under 14 years of age (%0-14) is a general index of youth and their burden on social resources. The %0-14 decreases from 22.82 in 1980 to 21.31 in 1990 and increases slightly to 21.58 in 2000. This decrease represents a decline in fertility only to be followed by a minor reproductive surge as the baby boomer generation of mothers passes through the peak childbearing years. Note that the youth generally are projected to decline from 1980 to 2000. The national figure for the %0-14 population was 28.5 in 1970, decreasing to 22.6 by 1980 and to 22.0 by 1983 (Bogue, 1985). This pattern of decline also is anticipated for metropolitan, contiguous, and non-contiguous counties. Even in the face of a shrinking percentage of youth, the contiguous counties still have a slightly larger proportion of youth than either the MSAs or non-contiguous counties.

Closely analogous to the above indicator is the percent of the population 5 to 19 years of age (%5-19) which focuses on the school age population. From 1980 to 2000 the projected

school age population will decrease 3.87 percent. The greatest declines in school age population between 1980 and 2000 are anticipated in contiguous counties (4.45 percent) . These declines are smallest in non-contiguous counties (3.92 percent), with MSAs intermediate at 3.71 percent.

The percent of the population 65 and older (%65+) is an indicator of the aged. For the state, the aged are expected to increase in each successive decade. This trend also is projected for each of the three county designations. Interestingly, metropolitan counties have the smallest percentages of aged; the non-contiguous counties have the largest; the contiguous counties fall in between. National figures for the 65 and older population increased from 9.9 percent of the population in 1970 to 11.3 in 1980 and 11.7 in 1983 (Bogue, 1985).

The percent of the population 15 to 64 years of age (%15-64) is an indicator of the potential work force. The work force for the state is projected to decrease from 1980 to 2000. Yet, there are differences in each of the three subclassifications. In MSAs the percentage of the population in the work force is projected to decrease, while in contiguous and non-contiguous counties, this percentage will increase slightly.

The burden ratio is obtained by adding the %0-14 and %65+ dividing by the %15-64 and multiplying by 100. This indicator reflects the ability of a work force to carry the youthful and aged dependents. This measure is also called the dependency ratio. For the state, the burden ratio increases from 1980 to 2000. This shift results from the expansion of the aged over the contraction of the youth.

The national burden ratio for 1980 is 51.30 (Bogue, 1985). In Tennessee the burden ratio in 1980 is 51.20. Projections indicate that the burden ratio will decline to 51.08 in 1990 and increase to 52.17 by the year 2000. In MSAs the burden ratio increases for the next two decades as the aged increase and the work force becomes smaller.

In the contiguous counties, the burden ratio decreases from 1980 to 1990, then increases slightly. The transfer of youth into the work force creates the more favorable ratio.

From 1990 to 2000, the youth increase as do the aged and the work force shrinks creating a less favorable ratio. In the non-contiguous counties, the burden ratio declines from 1980 to 2000 with the expansion of the work force. ■

TABLE 3

PERCENTAGE OF POPULATION BY AGE GROUP FOR THE STATE, MSAs, CONTIGUOUS AND NON-CONTIGUOUS COUNTIES: 1980, 1990, AND 2000

			1980			
Percent of Population Aged	0-4	0-14	5-19	15-64	65+	Burden
Total	7.17	22.82	24.89	66.14	11.04	51.20
MSA	7.17	22.59	24.71	67.27	10.14	48.66
Contiguous	7.27	23.76	25.63	64.48	11.76	55.09
Non-Contiguous	7.02	22.67	24.79	63.55	13.78	57.36
			1990			
Percent of Population Aged	0-4	0-14	5-19	15-64	65+	Burden
Total	7.53	21.31	21.01	66.19	12.50	51.08
MSA	7.57	21.32	20.89	67.03	11.65	49.19
Contiguous	7.58	21.55	21.45	65.12	13.33	53.57
Non-Contiguous	7.32	21.01	21.00	64.06	14.93	56.09
			2000			
Percent of Population Aged	0-4	0-14	5-19	15-64	65+	Burden
Total	7.28	21.58	21.02	65.72	12.70	52.17
MSA	7.25	21.52	21.01	66.39	12.08	50.62
Contiguous	7.45	21.95	21.18	64.59	13.45	54.82
Non-Contiguous	7.21	21.38	20.87	64.31	14.31	55.51

TEFS HELPS BUSINESS TO EXPECT THE UNEXPECTED.

A computer-based economic forecasting service tailored to the needs of Tennessee executives, planners, and decision makers.

The pathway to your company's future is seldom predictable. Executives today have learned to expect unexpected pitfalls. Knowing how to react when the unexpected occurs can mean the difference between success and failure. Fortunately, there's help. The Tennessee Economic Forecasting Service (TEFS) provides a comprehensive analysis of the state's economy on either a quarterly or an annual basis. Each Tennessee forecast incorporates an analysis of the U.S. economy prepared by Wharton Econometric Forecasting Associates, Inc.* The assumptions of this U.S. forecast underlie the quarterly and annual Tennessee econometric models developed at The University of Tennessee. TEFS subscribers benefit from a mass of relevant economic data made available through seminars, detailed annual and quarterly executive summaries, and through consulting services fine-tuned to the needs of your organization. Both short-term and long-term forecasting services are available. Each addresses vital business planning efforts in such areas as inventory planning, sales forecasting and budgeting, wage rate negotiations, regional market analysis, expansion-contraction decisions, investment analysis, energy conservation and cost-savings, and production planning.

If you would like more information on the Tennessee Economic Forecasting Service, please call or write the Center for Business and Economic Research, 100 Glocker Building, College of Business Administration, The University of Tennessee, Knoxville, Tennessee; (615)974-5441, or send in the information order form at the bottom of the front inside cover.

*The Wharton U.S. forecast is based on a national econometric model available through Wharton Econometric Forecasting Associates, Inc., of Philadelphia, PA.

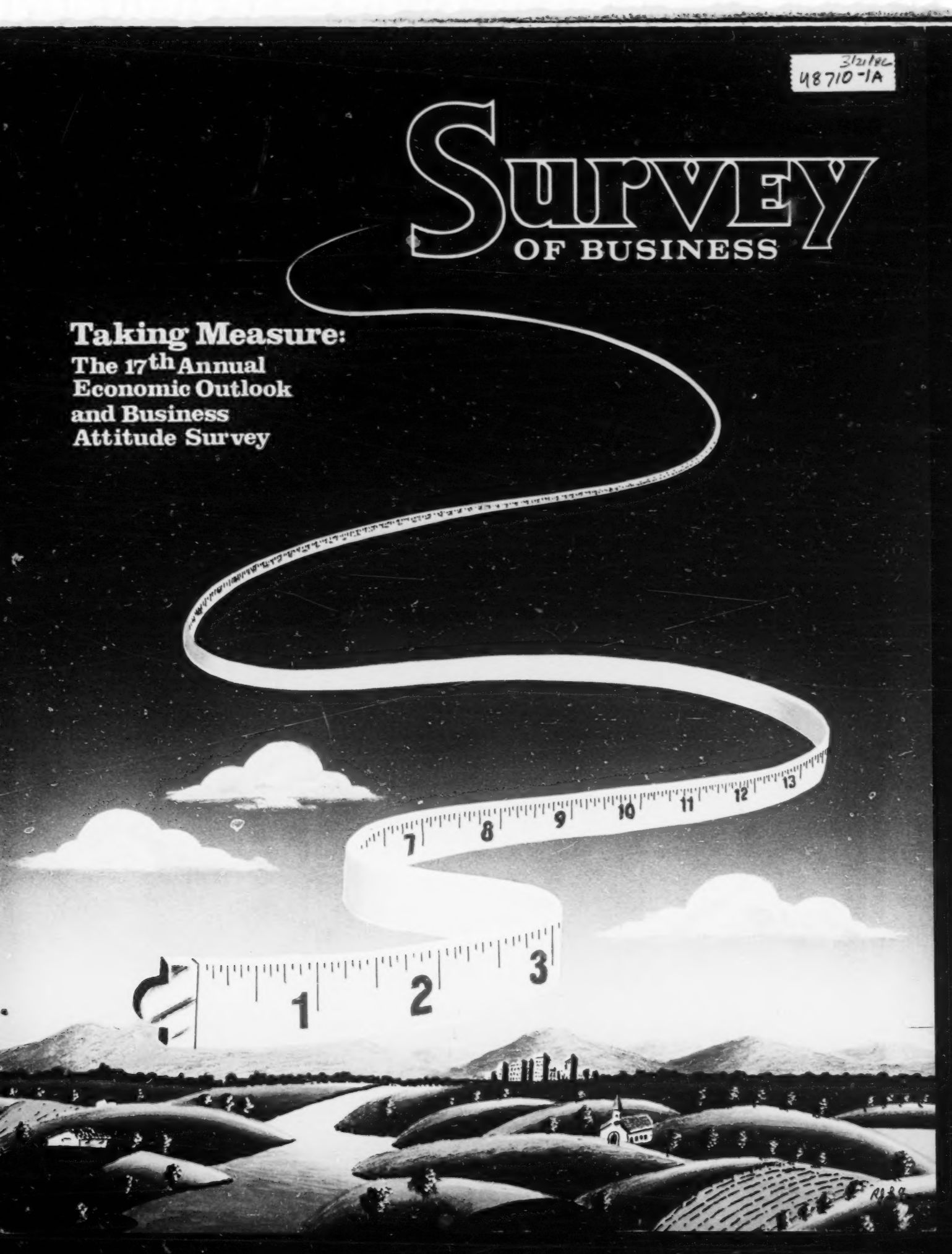
Tennessee Economic Forecasting Service

Center for Business and Economic Research

3/21/86
48710-1A

Survey OF BUSINESS

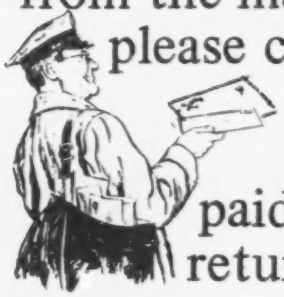
Taking Measure:
The 17th Annual Economic Outlook and Business Attitude Survey



Are You On Our Mailing List?

The staff of the **Survey of Business** is currently in the process of updating the mailing list and we need your help. If you are no longer at the address we have on file; or if you are receiving a copy of the magazine originally intended for someone else in your firm; or if you wish to have your name removed from the mailing list, please complete the attached, postage-paid mailer and return it to us.

Of course, if you are not already on our mailing list, we hope that you will use the card to become one of our regular readers. The **Survey** OF BUSINESS will keep you informed about current economic and socioeconomic trends developing in the state and up-to-date issues of interest to businessmen and women across Tennessee.



Center for Business and Economic Research
The University of Tennessee, Knoxville

PERSONNEL

C. Warren Neel, Dean
College of Business Administration

CBER APPOINTMENTS

David A. Hake, *Director and Editor, Survey of Business*

William F. Fox, *Associate Director and Research Associate Professor*

John W. Mayo, *Research Assistant Professor*

LeRoy T. Hansen, *Visiting Research Assistant Professor*

Maxwell J. Cornelius, *Manager, Computer Resources Group*

George A. Mundrake, *Coordinator, Instructional Support*

Patricia A. Price, *Sr. Research Associate*

Betty B. Vickers, *Research Associate*

Susan E. Bott, *Research Assistant*

Lillian Mason, *Research Assistant*

Deborah W. Crowder, *Office Supervisor Computer Resources*

Carol E. Schmidhammer, *Research Associate*

Jennifer F. Langston, *Sr. Secretary*

Donna Kemper, *Secretary*

Laura McCollough, *Clerk/Typist*

Sandra L. Turner, *Data Specialist*

Graduate Research Assistants

Byron C. Goins
Maria Teresa Hocson
Il Soo Jun

Consultant

Kenneth E. Quindry
Research Professor Emeritus

Art Director

Richard J. LeFevre, *Associate Professor of Art*

PUBLICATIONS GROUP

Jeanne P. McDonald, *Managing Editor*

Rebecca Kelly, *Publications Coordinator*

Joan M. Strong, *Editorial Assistant*

Patricia A. Hunley, *Word Processing Group Supervisor*

Patricia D. Flynn, *Word Processing Specialist*

Julia C. Elkins, *Word Processing Specialist*

Donna S. Hundley, *Technical Art*

Jennifer Jordan, *Technical Art*

The University of Tennessee
Winter 1986
Volume 21 Number 2

SURVEY OF BUSINESS

CONTENTS

Panelists for the 1986 Survey of Business Attitudes 2

1986 Survey of Business Attitudes 3
by David A. Hake, Donald R. Ploch, and Betty B. Vickers. *A survey of 176 Tennessee business leaders identifies economic strengths and weaknesses in the state for the year ahead.*

1986 Panelists Comment on the State of Our State 17

U.S. Outlook: Economy on the Move, but Which Way? 19
by John W. Mayo, with the U.S. agriculture forecast by Irving Dubov. *In the long run there are several key policy issues that raise significant questions about both the level and nature of economic growth in the U.S.*

The Tennessee Outlook: Another Year of Expansion 24
by William F. Fox and Leroy T. Hansen. *Current national conditions, which generally dictate the short-run performance of the Tennessee economy, indicate relatively slow growth in Tennessee for the next year.*

THE AUTHORS

David A. Hake *is Director of the Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville.*

Donald R. Ploch *is Professor of Sociology at The University of Tennessee, Knoxville.*

Betty B. Vickers *is a Research Associate at the Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville.*

John W. Mayo *is a Research Assistant Professor, Center for Business and Economic Research, and Assistant Professor of Economics, The University of Tennessee, Knoxville.*

Irving Dubov *is Professor of Agriculture Economics and Rural Sociology, The University of Tennessee, Knoxville.*

William F. Fox *is Associate Director of the Center for Business and Economic Research and Associate Professor of Economics, College of Business Administration, The University of Tennessee, Knoxville.*

Leroy T. Hansen *is Visiting Research Assistant Professor, Center for Business and Economic Research, The University of Tennessee, Knoxville.*

SURVEY OF BUSINESS, The University of Tennessee, Knoxville (ISSN 0099-0973), is published quarterly by the College of Business Administration, Center for Business and Economic Research, The University of Tennessee, Knoxville to inform the Tennessee business professional about current economic and socio-economic trends and techniques developing in the state. Authorization No. EOI-1490-001-83. Back issues and article reprints may be ordered at $1.25 per copy. Address correspondence to Editor, Center for Business and Economic Research, Suite 100, Glocker Hall, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170. Second class postage paid at Knoxville and Nashville, Tennessee. Requests for inclusion on mailing list and address corrections should be sent to the same address. The publisher of the **Survey** *assumes no responsibility for statements made by writers. Articles reflect the opinions of the authors. Postmaster: Send Change of Address form 3579 to: Center for Business and Economic Research, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170.*

WELCOME to the annual OUTLOOK edition of the **Survey of Business**. The 1986 Outlook Panel, below, is the largest in our 17-year history of asking leading executives from business, education, government and industry to share their views on issues that can affect the lives of all Tennesseans. In the **1986 Survey of Business Attitudes** article that follows, three major sections present panel responses and offer representative comments on the economic outlook for the state and nation, views of the possible effects of NISSAN U.S.A. and Saturn Corporation decisions to locate in Tennessee, and executive attitudes about Tennessee as a possible site for a national nuclear waste repackaging and storage facility.

In the second article, John W. Mayo examines the national economic forecast, which includes an agricultural Outlook by Irving Dubov. The third article, by CBER economist colleagues William F. Fox and Leroy Hansen, presents the CBER forecast for the Tennessee economy in 1986 and 1987. The latter two articles have been adapted from the 1986 **Economic Report to the Governor of the State of Tennessee on the State's Economic Outlook**.

David A. Hake, Editor and Director, CBER

PANELISTS FOR THE 1986 SURVEY OF BUSINESS ATTITUDES

*Norbert J. Ackermann, Jr., President, CONINCO, Inc., Knoxville
Herbert G. Adcox, President, Adcox-Kirby Chevrolet, Chattanooga
Richard N. Aft, Executive Director, United Way of Greater Memphis, Memphis
*James H. Alexander, Executive Director, Insurors of Tennessee, Nashville
W. Arant, Jr., President, First Tennessee Bank, Knoxville
*Charles E. Ashworth, General Manager, Continental Baking Co., Inc., Memphis
C. F. Bailey, Assistant Superintendent, Corbin Division, Clinchfield Railroad Company, Seaboard System Railroad, Erwin
†Alf T. Barnette, Executive Vice President, West Tennessee Industrial Association, Jackson
*Don W. Belcher, Director of Research, Nashville Area Chamber of Commerce, Nashville
Charles Bell, Manager, Employee Relations, Allied Corporation, Knoxville
*Thomas R. Bell, President, East Tennessee Natural Gas Co., Knoxville
Ernest H. Bennett, Plant Manager, E.I. du Pont de Nemours & Company, Chattanooga
Sonny Bias, Chief Financial Officer/SVP, First Tennessee National Corporation, Memphis
David W. Bird, Southeast Regional Manager, Peterbilt Motors Company, Madison
Edward C. Blank, II, Senior Partner, Trabue, Sturdivant & DeWitt, Nashville
*John C. Bolinger, Jr., Chairman and President, Tennessee Natural Resources, Inc., Nashville
E. C. Bondi, Jr., Executive Vice President, Loveman's, Inc., Chattanooga
Stephen J. Boyer, President, Tennessee Retail Federation, Nashville
L. B. Brittain, Jr., Vice President, Industrial Development, Kusan, Inc., Brentwood
J. Don Brock, President, Astec Industries, Inc., Chattanooga
*Berry Brooks, Senior Vice President, Commerce Union Bank, Nashville
Curtis Brown, Operations Manager, Emerson Electric Company, Paris
†John D. Canale, President, D. Canale & Company, Memphis
*Richard W. Cardin, Managing Partner, Arthur Andersen & Company, Nashville
*Ralph D. Carwathan, Director of Industrial Development, Tennessee Valley Authority, Knoxville
*William R. Carter, Chairman, Carter Ltd., Inc., Fayetteville
B. Allen Casey, Jr., President and Chairman, Chattanooga Choo Choo, Inc., Chattanooga
†William V. Chafin, Jr., Executive Director, Maury County Chamber of Commerce, Columbia
†Edmond D. Cicala, President, Edmond Enterprises, Inc., Memphis
*David Coffey, President, The Nucleus, Inc., Oak Ridge
†Robert B. Colbert, Jr., Chairman, Wayne-Gossard Corporation, Chattanooga
*Steve G. Connerly, President, Pet Incorporated-Dairy Division, Johnson City
*Charles W. Cook, Jr., President and Chief Executive Officer, Third National Corporation, Nashville
David W. Cooley, President, Memphis Area Chamber of Commerce, Memphis
†James C. Cotham, III, Senior Vice President, Nashville City Bank, Nashville
†John I. Cox, Jr., Vice President, Tennessee Eastman Company, Kingsport
Gary Cunningham, Advertising Manager, Newspaper Printing Corporation, Nashville
*Roger A. Daley, President and General Manager, Knoxville News-Sentinel Company, Knoxville
Thomas H. Davis, C.P.A., Internal Auditor, Tennessee Farmers Co-op, LaVergne
†Charles H. Dean, Jr., Chairman, Tennessee Valley Authority, Knoxville
Ronald T. Deger, President, Dempster Systems, Inc., Knoxville
Sami R. Dietrich, Executive Director, Dyer County Area Chamber of Commerce, Dyersburg
William H. Dye, Jr., Manager of Personnel, Combustion Engineering, Inc., Chattanooga
Arthur R. Eggert, Director of Manufacturing Operations, Bridgestone Tire Manufacturing, LaVergne
Paul H. Engelmann, Executive Director, United Way of Greater Chattanooga, Chattanooga
*Joseph R. Exum, Chairman, Leland-Powell Fasteners, Inc., Martin
Charles W. Fentress, Vice-President Personnel, Cain-Sloan Company, Nashville
*John T. Flaugher, Executive Vice-President, Williamson County Bank, Franklin
*W. K. Ford, President, Ford Construction Company, Dyersburg
†William A. Fortune, Chairman, Fortune Mansgill Farm Development Corp., Knoxville
Jerry B. Fussell, President, JBF Associates, Inc., Knoxville
John B. Gaither, Director of Marketing, American National Bank & Trust Company, Chattanooga
*John F. Germ, President, Chief Executive, Officer, Campbell & Associates, Inc., Chattanooga
William A. Gibson, President, Elographics, Inc., Oak Ridge
*Buford Goldstein, President, Hampton Print Works, Inc., Johnson City
†William C. Grater, President and General Manager, Bowater Southern Paper Company, Calhoun
*M. E. Greiner, Jr. Vice President, Scripps-Howard Broadcasting Company, Memphis
Clayton N. Gribble, Plant Manager, Oster Division of Sunbeam, McMinnville
*Darwin R. Grieu Vice President and General Manager, E. C. Wiegand Division, Emerson Electric Company, Murfreesboro
*Joe R. Grooms, Controller, Martin Marietta Ordnance Systems, Inc., Milan Army Ammunition Plant, Milan
G. Lynn Guthrie, Vice President, CFW Construction Company, Inc., Fayetteville
Kyle Hale, Director of Manufacturing, Century Electric Company, Lexington
Beth Halseman, Assistant Professor, Center for Labor Management Relations, Tennessee State University, Nashville
John D. Haltom, Division Distribution Director, United Foods, Inc., Bells
*F. W. Hamilton, President, Industrial Development and Warehousing Inc., Jackson
*Fred Harvey, Jr., President, Harveys Department Stores, Nashville
James Haslam, II, President, Pilot Oil Company, Knoxville
Jerry Hawkins, Plant Manager, Owens Corning Fiberglass, Jackson
Robert M. Hendrix Sr., Chairman of the Board, Production Credit Association, Dyersburg
*Taylor H. Henry, Jr., Vice President – Finance, Shoney's, Inc., Nashville
†Waymon L. Hickman, President, First Farmers and Merchants National Bank, Columbia
Armond Hirtriter, Vice President, Operations, Millers, Inc., Knoxville
K. D. Holder, Plant Manager, Trenton Mills, Inc., Trenton
*James W. Hopper, Director of Operations, ITT Telecom Products Corporation, Milan
Edwin C. Hoskins, General Manager, Knoxville Utilities Board, Knoxville
Robert L. Huffman, Industrial Relations Manager, Procter & Gamble Company, Jackson
Eric H. Hunger, Area Manager, Union Chemical, Memphis
M. V. Hunnong, Jr. President and Chief Executive Officer, Winners Corporation, Brentwood
Pat J. Jansen, Sr. Vice President – Finance, Allen & O'Hara Inc., Memphis
Kenneth Jarmolow, President, Martin Marietta Energy Systems, Inc., Oak Ridge
*J. L. Johnson, Vice President, South Central Bell Telephone Company, Nashville
William W. Johnson President, Associated Brokers of Tennessee, Nashville
M. Marion Jones, President, Beecham Laboratories, Bristol
*Glenn W. Jones, Partner, Research Department, J.C. Bradford Company, Nashville
Roger Kennedy, Director of Marketing, AFG Industries, Inc., Kingsport
*Woodell C. Kirk, President, Heritage Federal Savings and Loan Association, Kingsport
*R. D Klaser, Plant Manager, Ford Motor Company, Nashville Glass Plant, Nashville
*Gene C. Koonce, President and Chief Executive Officer, United Cities Gas Company, Nashville
†James W. Lail, President, Raines Brothers, Inc., Chattanooga
†Carl H. Langschmidt, Jr., Attorney, Boone, Wellford, Clark, Langschmidt & Apperson, Memphis
†E. H. Lannom, Chairman of the Board, Forcum-Lannom Associates Inc., Dyersburg
James Lattimore, Jr., CPA, President, Lattimore, Black, Morgan and Cain, P.C., Brentwood
*W. Carroll Leonard, Plant Manager, Raytheon Company, Missile Systems Division, Bristol
*Eldon Leslie, Executive Secretary, Industrial Development Board, Cookeville
Gerald F. Lewis, President, United Way of Nashville and Middle Tennessee, Nashville
*Ronald S. Ligon, President, Christus Gardens of Gatlinburg, Franklin
Stallings Lipford, President and Chairman, First Citizens National Bank, Dyersburg
T. L. Little, Secretary/Treasurer, Green Seed Company, Gallatin
Robert H. Lloyd, Senior Vice President, First American National Bank, Kingsport
Lake F. Loudermilk, President, International Union of Electricians, Local 760, Jefferson City
*Howard W. Loveless, President, Sealy Southeast, Memphis
*Thomas A. Lupton, Jr., President, Stone Fort Land Company, Chattanooga
*Leo J. Matthews, President and General Manager, Pay Cash Grocery Company, Inc., Knoxville
Henry H. Maupin, Controller, Mead Paper Company, Kingsport
†John E. McCutchen, President, E. L. Morgan Company, Jackson
Millard McDonnell, Vice President, Industrial Systems Division, Texas Instruments, Johnson City
*Merle C. Meyers, General Manager, Middle Tennessee Utility District, Smithville
Everett Moody, Plant Manager, Holley Carburetor Division, Colt Industries, Paris
*George A. Morgan, Chairman of the Board and Chief Executive Officer, Valley Fidelity Bank & Trust Company, Knoxville
*Robertson G. Morrow, Jr., Chairman, Two Morrows, Memphis
Wayne Murdock, Executive Director, United Way of Greater Knoxville, Knoxville
Robert Murphy, Statistician in Charge, Tennessee Crop Reporting Service, Nashville
J. Kevin Nameth, President, Schrader Automotive Group, Scovill Inc., Nashville
Hugh G. Neal, Jr., President, Special Instruments Laboratory, Inc., Knoxville
Ralph E. Newman, Jr., Chairman of the Board, The Bankers' Service Life Insurance Company, Knoxville
John F. Nicholson, President, Tennessee Apparel Corporation, Tullahoma
James E. Orgain, President, Orgain Building Supply Company, Inc., Clarksville
Stanley D. Overton, Chairman and Chief Executive Officer, Fidelity Federal Savings & Loan Association, Nashville
William Ownby, Vice-President, Operations, McCord Winn Division, Ex-Cello Corp., Cookeville
John L. Parish, President, Lannom Manufacturing Company, Inc., Tullahoma
*H. T. Parks, Chairman of the Board, T. U. Parks Construction Company, Chattanooga
Marie J. Pavia, Manager Human Resources, Eaton Corporation, Axle-Brake Division, Gallatin
William Perry, Executive Vice President, Memphis Area Chamber of Commerce, Memphis
Ivan Pitt, General Manager, Reelfoot Packing Company, Union City
Staley E. Pillow, State Legislative Director, United Transportation Union, Nashville
†Richard A. Pirkle, Manager, Building Systems Department, Allen & Hoshall, Inc., Knoxville
*Herman Postma, Vice President, Martin-Marietta Energy Systems, Oak Ridge
Patricia D. Postma, President, Business Investment Services, Oak Ridge
Walter L. Price, Partner, Bryant, Price, Brandt, Fox, Booze & Taylor, P.C., Johnson City
*Harwell W. Proffitt, Chairman of the Board, Proffitt's, Inc., Alcoa
Cooper Prude, Vice President, Industrial Relations, N.A.P. Consumer Electronics Corporation, Knoxville
*Allan G. Pulsipher, Chief Economist, Tennessee Valley Authority, Knoxville
†James S. Putman, President, Tennessee Farmers Mutual Insurance Company, Columbia
*James B. Ragland, Chairman, C.B. Ragland Company, Nashville
*Richard E. Ray, Manager, Tennessee Operations, Aluminum Company of America, Alcoa
*Arthur J. Rebrovick, Jr., President, Cutters Exchange, Inc., Nashville
Bryant A. Reed, Jr., General Manager, Armstrong Tire Company, Madison
Richard H. Rennert, Marketing Director, The Commercial Appeal, Memphis
James L. Rippy, Sr., Executive Director, Obion County Chamber of Commerce, Union City
*Robert A. Rogers, Vice President Administration, Plumley Rubber Company, Paris
*James L. Simmons, President and Chairman of the Board, Tri-City Bank & Trust Company, Blountville
*Gary N. Smith, President, American Uniform Company, Cleveland
James F. Smith, Jr., Chairman and Chief Executive Officer, First American National Bank, Knoxville
M. Lee Smith, Publisher, M. Lee Smith Publishers and Printers, Nashville
Fred Smith, Chairman and Chief Executive Officer, Federal Express, Memphis
Reese L. Smith, III, President, Haury and Smith Contractors, Nashville
*Andrew J. Spurgeon, Senior Resident Vice President, Merrill, Lynch, Pierce, Fenner & Smith, Inc., Nashville
Herbert St. Goar, President and Chief Executive Officer, Dixie Saving Stores, Inc., Chattanooga
*Carl M. Stanley, President, Burroughs-Ross-Colville Company, McMinnville
Frederick T. Steel, Plant Manager, Goodyear Tire & Rubber Company, Union City
J. Gilbert Stein, Chairman of the Board, Stein Construction Company, Chattanooga
Thomas E. Sudman, President, Sudman & Associates, Knoxville
*William H. Swain, Chairman of the Board and President, First National Bank, Oneida
*Larry E. Swanson, Vice President-Commerce, Carrier Air Conditioning Company, McMinnville
Ray U. Tanner, President & CEO, Jackson National Bank, Jackson
James W. Terry, Senior Vice President, Union Planters National Bank, Jackson
*W. Neil Thomas, Jr., President, Thomas, Mann & Gossett, P.C., Chattanooga
*J. R. Thompson, Vice President/Finance, TPI Corporation, Johnson City
Douglas P. Thorley, Plant Manager, TRW Steering Components Group, Ross Gear Division, Lebanon
*Julian P. Townsend, President, Townsend Supply Company, Jackson
*Earl H. Triplett, Chairman and Chief Executive Officer, First American Bank, Memphis
†Carl W. Truehe, Plant Manager, ICI Americas, Inc., Chattanooga
Thomas M. Tucker, Director, Power Equipment Company, Knoxville
Richard E. Tumblin, CLU, Chartered Financial Consultant, Tumblin-Gannaway Associates, Knoxville
T. R. Turner, Division Manager of External Affairs, Buckeye Cellulose Corporation, Memphis
†John M. Upchurch, Appraiser and Land Surveyor, Buchanan
*Lawrence W. Whalen, Jr., Director, The Berkline Corporation, Morristown
*Thomas J. Whatley, Associate Dean, Tennessee Agricultural Experiment Station, The University of Tennessee, Knoxville
*Jack D. Whitfield, President, Sverdrup Technology, Inc., Tullahoma
Charles M. Wilson, Economist-Broker, REFCO, Inc., Memphis
†W. Lewis Wood, Jr., Senior Vice President, Allen & Hoshall, Inc., Memphis
Jim Woods, Manager, Economic Development Council, Kingsport Chamber of Commerce, Kingsport
Harold G. Woods, President, Knoxville Area Central Labor Council, AFL-CIO, Knoxville
Thomas L. Yount, President, Tennessee Innovation Center, Inc., Oak Ridge
*Allen Zang, President, Nashville Bridge Company, Nashville

* These panelists have served 15 or more years.
† These panelists have served 10 or more years.
* These panelists have served 5 or more years.

176 Tennessee business leaders respond to various developments in the state which might shape its economic future.

SMALL THUS,...
IT IS IMPERATIVE THAT LABOR CURB....
INTEREST RATES ARE FALLING SUBSTANTIALLY
THE CONSTRUCTION MARKETPLACE IS STILL OVERLY COMPETITIVE.
FOR THE UNITED STATES TO BE COMPETITIVE IN WORLD MARKET
GENERAL INCREASE IN ECONOMIC ACTIVITY...
IN SOME INDUSTRIES PROFIT MARGINS HAVE BEEN SHRINKING
I FEEL THE LONG-RANGE EFFECTS WILL BE POSITIVE-HIG WAGES, SOL
A SLUGGISH ECONOMY, RESULTING IN UNDER-UTILIZED CAPACITY....
THE NEW AUTO MANUFACTURING PLANTS ARE A PLUS AND...
WAGE DEMAND AND OTHER
WEST TENNESSEE IS A CAPITAL-POOR AREA. START-UPS...

1986 SURVEY OF BUSINESS ATTITUDES

David A. Hake
Donald R. Ploch
Betty B. Vickers

This year's survey of attitudes of Tennessee executives is presented in three parts. First, in the Economic Outlook for Tennessee and the nation, the executives reveal their own analyses of Tennessee's economic strengths and weaknesses, identifying economic problem areas in the year ahead, and commenting on what, if anything, can be done to correct them. Part 2 contains panelists' views concerning the effects of the increase in transportation manufacturing employment on the state economy and on management practices and labor relations in Tennessee.

Part 3 details responses of the panel to the possible effect that a state monitored retrievable storage site (MRS) would have on future business location decisions, as well as several other related issues.

PANEL VIEWS OF THE U.S. AND TENNESSEE ECONOMY

Tennessee business leaders are looking to 1986 with optimism. Nearly 80 percent of the executives from across the state who make up the **1986 Outlook Panel**[1] expect the Tennessee economy to improve in 1986 compared to 1985. As shown in Figure 1, almost one-third of these optimists expect the improvement in 1986 to be "moderate" or "substantial." Just 5 percent of the panel expects a relative decline in Tennessee's 1986 economy.

The U.S. economy, on the other hand, is viewed with about half as much optimism as the state economy. Forty percent of the panelists think that the 1986 national economy will be better than it was in 1985. Approximately one-third of the respondents expect no change, and 27 percent anticipate that the 1986 U.S. economy will be down relative to 1985 national performance.

Following are quotes from three of the 176 executives on this year's panel, with comments on Tennessee's overall economic prospects for 1986 and areas of strength and weakness. (For more comments, see "Business Panel Comments on the State of Our State" later in this article.)

The Tennessee economy will be robust in 1986, fueled by heavy construction activity in connection with the Saturn plant and increased industrial and logistic support brought about by expanding air carrier hubs (Republic and American) and improved river transportation, resulting from the opening of the Tennessee Tombigbee Waterway. The key weaknesses in the

1. The 17th annual Economic Outlook Survey was mailed to 301 Tennessee business leaders in October of 1985. Of a total of 176 responses, eight were received too late to be included in the tabulation of data; however, their comments are included in the narrative portion of this article.

outlook are the reduction in industrial development bond financing, increasing interest rates, and the possible further deterioration of state and local government cooperation, coupled with an explosive primary and general election campaign. **A Consulting Engineer from West Tennessee**

Overall, Tennessee has a very good outlook. However, many of its jobs in textiles and manufacturing will continue to be exported. I feel the level of strong regional planning in areas such as water sewers and transportation may be, next to education, our second greatest dilemma. **A Business Leader from Middle Tennessee**

Strengths in 1986:

1. *Saturn will spark supporting industry*
2. *Supportive state administration will attract added capital investment from outside Tennessee*

Weaknesses in 1986:

1. *Tax/revenue problems*
2. *Penal system deficiencies*

In the Outyears – Strengths:

1. *Educational programs will pay off*
2. *High Tech in East Tennessee will materialize*

Outyears – Weakness:

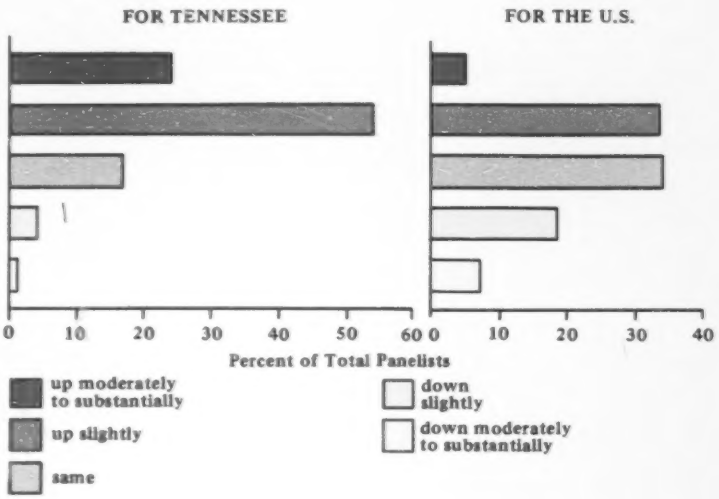
We worry about our ability to deliver consistently high quality state leadership in future administrations
A Manufacturer from East Tennessee

Response by Geographic Location

Of this year's 176 panelists, 48 are from West, 56 are from Middle, and 72 are from East Tennessee. As shown in Figure 2, the greatest optimism toward the state economic picture is expressed by business leaders from Middle Tennessee, 86 percent of whom look for slight, moderate, or substantial improvement in the state economy in 1986. Only 1 percent of the panelists from Middle Tennessee think the state economy will be down in 1986 relative to 1985.

Expectations of East Tennessee panelists are not quite as high for the state economy as those from Middle Tennessee, with 80 percent anticipating some improvement in 1986. Though still positive, the least optimistic view of the 1986 Tennessee economy is held by panelists in West Tennessee, where 65 percent expect improvement, and 35 percent expect the state to remain the same or be down in comparison with 1985 performance.

1. Panelists are much more optimistic about the Tennessee economy than the U.S. economy in 1986 compared to 1985.



The panel forecast for the national economy by geographic sector is shown in the right-hand column of Figure 2. At the same time Middle Tennesseans are more optimistic about the state than other panelists, they are also more pessimistic in their view of the 1986 U.S. economy than their peers representing other sections of the state. A U.S. decline in 1986, relative to 1985, is expected by 31 percent of the Middle Tennessee panelists, compared with 26 and 23 percent for West and East Tennessee panelists, respectively.

Another interpretation of regional differences in attitude between state and national outlook is the extent to which our state economy is viewed as dependent on, or independent of, the economy of the rest of the country. On such a scale, it appears that the East Tennessee panelists view the state economy as more linked to, or dependent on, the U.S. economy than do panelists from the rest of Tennessee. Conversely, Middle Tennesseans on the panel feel that the state has less economic dependence on, or more independence from, the national economy than do other executives on the panel.

Business Sector View

Figure 3 shows the expectations of respondents by broad business sector for the state and national economies. For this analysis, the sector groupings and distribution of panelists are as follows: manufacturing – 65 panelists; trade (which includes wholesale and retail businesses) – 22; Finance (including banks, savings and loan associations, and insurance) – 32; and "other," which includes 57 executives from construction, labor, education, state and local government, and firms engaged in the provision of services.

The strongest positive response to the state, as well as the national economies, was given by executives from the finance sector. Ninety-one percent of these respondents expect the state

economy to be up in 1986 relative to 1985, and 53 percent look for an upward change in the U.S. economy. Trade sector panelists were the next most positive about both the state and the national economies. Such similarity in state-versus-U.S. expectations indicates a greater sense of dependence between the state and the national economy. This similarity is perceived by both finance and trade sector executives, more than by manufacturers and other executives on the panel.

Though not quite as optimistic in their outlook as executives from the finance and trade sectors, over 70 percent of the panelists from the manufacturing and composite "other" sectors expect the Tennessee economy to be "up" in 1986 relative to 1985. Of these optimistic executives, nearly 40 percent of the "composite sector" and 25 percent of the manufacturing panelists expect improvement to be moderate or substantial.

The manufacturing and "other" sectors are not as optimistic for the U.S. economy as they are for the state. Only about one-third of the respondents from these sectors expect the national economy to be up over last year, with two-thirds of the panel anticipating stability or decline from 1985 on into 1986.

Major Economic Concerns

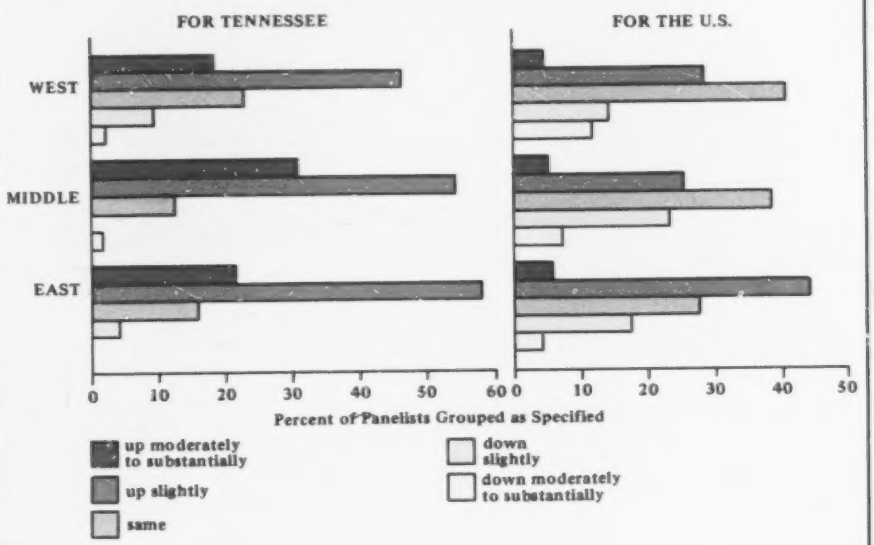
Members of the 1986 Economic Outlook Panel were asked to record their opinions on each of 19 specific economic areas in Tennessee for 1986 relative to 1985. Then they were asked to rank the five most critical economic problem areas and comment on their first choices. Panel responses led to the identification of the **Eight Most Critical Economic Problems Facing Tennessee in 1986** presented in Figure 4.

1. Level of Unemployment (score=309)*

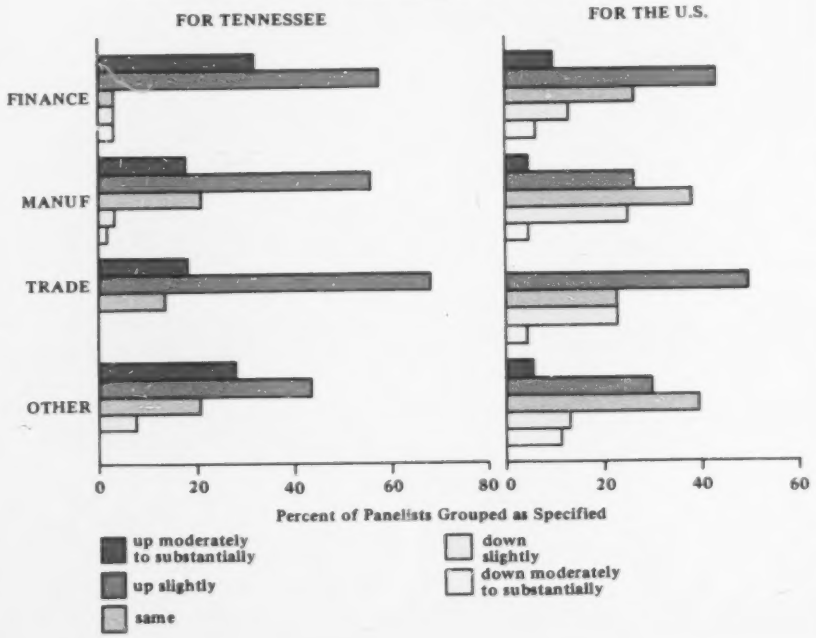
Although the level of unemployment has continued to decline annually since its peak in 1982, panelists ranked this issue as the most critical in the 1984 Economic Outlook, second only to their

* The "score" shown behind each issue is the weighted rank summed across all panelists. It is included to indicate the relative importance of the issues.

2. Middle Tennessee-based executives are more optimistic about the state economy and least optimistic about the national economy for 1986 compared to 1985.



3. Across Industrial Sectors finance and trade panelists are more optimistic in their views about the Tennessee and U.S. economies for 1986 compared to 1985.



concern for high interest rates in the 1985 Economic Outlook, and first again this year. The majority of panelists from each geographic and business sector look for the level of unemployment to continue to decline; yet, 52 percent ranked this issue among the top five concerns for 1986. The reasons for ranking unemployment first among their concerns is perhaps best expressed by these panelists:

The most critical problem is difficult to identify, since so many of the economic problems are dependent on each other. Reduction of unemployment would automatically have a positive impact on many other areas. We should continue to sell Tennessee as the 'best state' for new/expanding industries. Recent accomplishments demonstrate it can be done, and both the short- and long-range impact will help cure many of the economic ills. **A Manufacturer from East Tennessee**

Even though many counties have attracted new industry, many rural communities are experiencing high unemployment because of problems in the garment industry. State and local governments must provide incentives to cause other manufacturers to locate here. **A Middle Tennessee Banker**

By reducing unemployment through the creation of jobs (excluding government work programs), we can increase the tax base within the state and county. This will allow us to provide better services to the citizens, such as education, roads, etc. **A Trade Sector Executive from West Tennessee**

We need to create new sources of jobs locally. We cannot rely just on recruitment of national expansion firms. These can make our state too sensitive to business cycles – 'the Michigan of the South.' We already are extremely sensitive – second only to Alabama. Unless state and local governments, schools and businesses recognize the importance of enabling blacks to be contributors to our economy, not just as customers, we are wasting a tremendous resource. **A West Tennessee Banker**

2. Scarcity of Skilled Workers (273)*

With unemployment listed as the most critical concern of business leaders, identification of "scarcity of skilled workers" as the second issue leads to an implied priority for education and training. Since ranking it fourth in the 1984 Outlook issue of the **Survey**, panelists continue to express concern over the scarcity of skilled workers to enhance industrial recruitment. Now many of the 1986 Economic Outlook panelists anticipate increased pressure on the current supply of skilled workers with the location of the GM-Saturn plant and other transportation industry suppliers to both Nissan and GM.

Finding qualified and skilled workers is a problem now. With additional growth and expansion, qualified workers will be in high demand and this will result in higher wage rates. **A Middle Tennessee Construction Industry Executive**

Panelists **recognized** the fact that improvements in education and training programs are a long-term and ongoing process. Even though 42 percent of the respondents expect the supply of skilled workers to increase in 1986 relative to 1985, nearly 60 percent expect skilled labor supply problems to remain critical or worsen in 1986.

Skilled workmen are the key to moving into a high-tech society. Our system of education of young people has just now taken that into account. It will be several years before that effort yields enough young people who are trained to meet the needs of the industries we have recruited. **A Utility Executive from East Tennessee**

Areas of our state, particularly West Tennessee, continue to attract poorly educated, low skilled people rather than highly educated or skilled professionals. **A West Tennessee Social Service Executive**

Skilled labor will be necessary to operate the industry of the 80s and beyond. Tennessee's labor force presently is mostly unskilled labor. We need to train (or retrain) our existing workforce rather than see a mass influx of skilled workers from other parts of the country. **A Banker from Middle Tennessee**

3. Interest Rates on Loans (219)*

Concern about interest rates on loans moved from the most critical issue last year to third place for 1986. Forty-four percent of the Outlook Panelists expect interest rates to increase in the coming year. Thirty-three percent think rates will be about the same as in 1985, and 23 percent expect a decline. Executives from the manufacturing and trade sectors ranked this issue highest (approximately 23 percent ranked this issue either first or second.) Geographic differences are seen primarily in the responses of executives from West Tennessee, where 28 percent ranked interest rates first or second in their concerns.

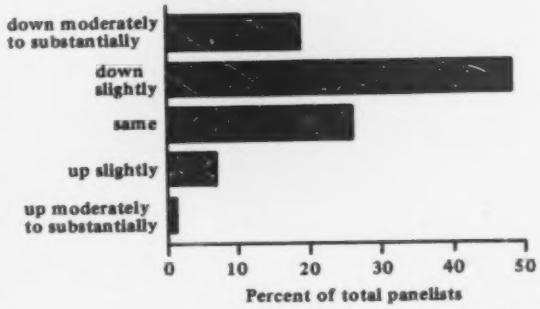
While interest rates have indeed fallen substantially over the past 3-5 years, and stabilized somewhat, the rates are still too high with too much uncertainty of the future. I appreciate 'creative' financing, but somewhere we need . . . something more definite. **An East Tennessee Economic Development Specialist**

Interest rates are still too high to allow the economy to operate [efficiently]. Until excessive federal government spending can be controlled this factor will not be corrected. The answer rests in a Congress which doesn't seem capable of accepting responsibility. **An Attorney from East Tennessee**

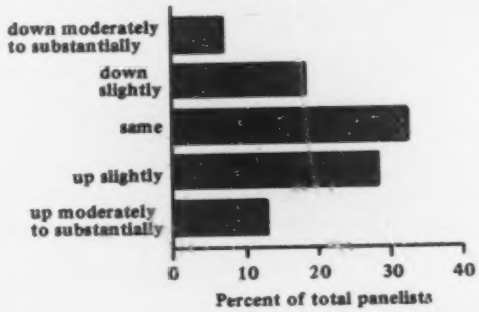
* The "score" shown behind each issue is the weighted rank summed across all panelists. It is included to indicate the relative importance of the issues.

Figure 4:Major economic concerns in Tennessee: ranking and expected performance in 1986 compared to 1985

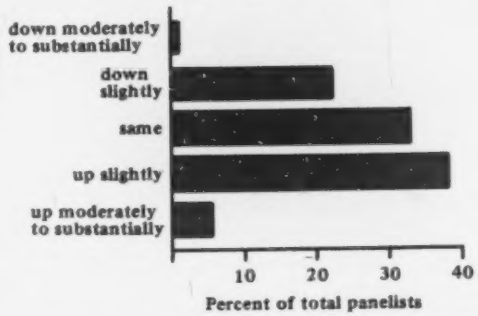
1. Unemployment is considered to be the most critical economic issue in 1986.



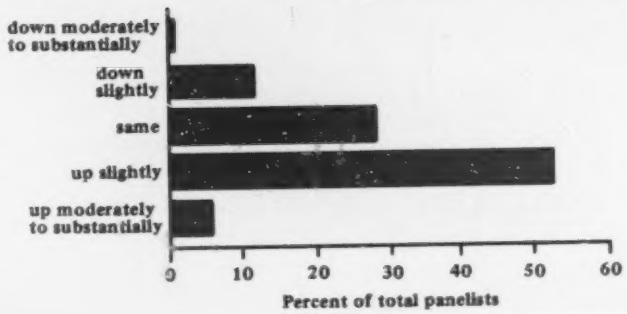
2. Panelists are divided on their expectations about skilled labor supply, but many feel it will remain unchanged.



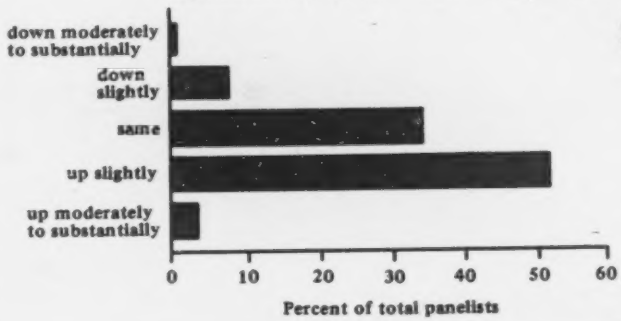
3. Interest rates are expected to rise only slightly in 1986, if they change at all.



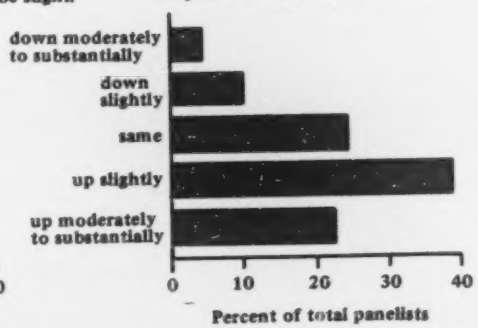
4. The cost of doing business in Tennessee is once again expected to increase faster than the revenue received.



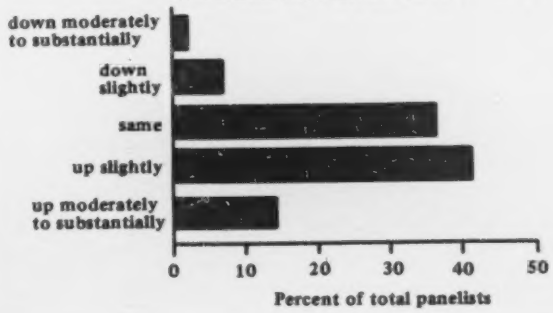
5. The rate of utilization of plant capacity continues to be an important issue. Yet any increases are expected to be slight.



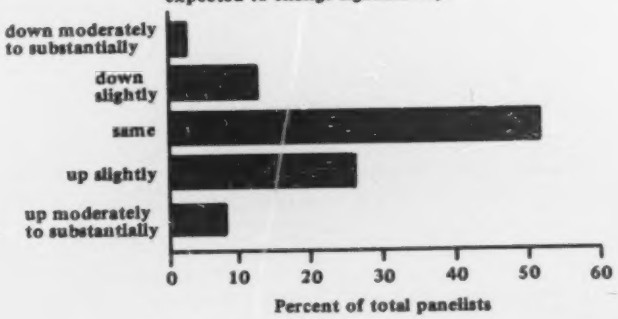
6. Most of the panelists expect an increase in the supply of capital investment funds.



7. Most panelists believe that 1986 will see heightened demands for wage rate increases.



8. Cooperation between labor and management is not expected to change significantly.



Interest rates are at all-time highs when compared to the inflation rate. These costs are out of line and are having an extremely negative impact on profit margins. Major reductions in government spending are necessary to reduce real interest rates. **A West Tennessee Manufacturer**

Although the following five issues were not top ranked as often as the first three issues, by virtue of their scores,* they still represent areas of considerable concern to the panel. Representative opinions follow each ranked issue.

4. **Total Business Costs Increasing Faster Than Revenues (174)***

The construction marketplace is still overly competitive. Therefore [we cannot] recover steadily increasing costs [of] overhead, insurance and employee costs. **A West Tennessee Construction Industry Executive**

For the United States to be competitive in world markets and to recover those [markets] already lost, we must lower our cost of production. **An Insurance Executive from Middle Tennessee**

In some industries, profit margins have been shrinking due to pricing from foreign competition. Unfair trade restrictions, strong dollar, and mediocre productivity gains are some of the reasons for the competitive edge. Outlook for improvements in these areas will benefit U.S. producers. **An East Tennessee Manufacturer**

5. **Underutilization of Plant Capacity (166)***

A sluggish economy, resulting in under-utilized capacity and corresponding unemployment in manufacturing industries, is a key problem in both Tennessee and the nation. A key factor affecting Tennessee is an overvalued dollar, resulting in severe import competition, causing loss of jobs and plant utilization in our textile-related industries, as well as many other industries. The solution is a much stronger plan to curb the deficit and then to lower interest rates that cause the overvalued dollar to maintain its current strength. **A Manufacturer from East Tennessee**

6. **Supply of Capital Investment Funds (163)***

West Tennessee is a capital-poor area. Start-ups, expansions and fewer industrial development revenue bonds will affect our growth. **A Business Leader from West Tennessee**

7. **Demands for Wage Rate Increases (151)***

Wage demand and other factors will force costs up faster than revenues can be adjusted. Companies must continue to find ways to improve productivity if they are to maintain profitability. **A Middle Tennessee Banker**

8. **Labor-Management Cooperation (141)***

Many of Tennessee's industries are small; thus, labor-management problems, drops in productivity levels or strikes can have an extremely detrimental effect upon not only the company, but the community as well. Therefore, it is imperative that labor curb increasing demands for benefits and demands for much higher wages. Quality management procedures implemented through cooperative efforts of both labor and management can aid in boosting profits, thus providing a definite means for increasing wages. **An East Tennessee Savings and Loan Industry Executive**

Scores on the remaining eleven issues ranged from 8 points to 103 points.

* The "score" shown behind each issue is the weighted rank summed across all panelists. It is included to indicate the relative importance of the issues.

Ninety-eight percent of the panelists think the increase in transportation will benefit the Tennessee economy.

TRANSPORTATION MANUFACTURING AND BUSINESS DEVELOPMENT IN TENNESSEE

Members of the 1986 Economic Outlook Panel were asked several questions related to the growth of transportation manufacturing – the location of Nissan U.S.A., the then-tentative location of General Motors' first Saturn Corporation assembly plant in Middle Tennessee, and the possibility of a nearby Toyota plant location. Panelists were asked about the effect of the increase in transportation manufacturing employment on the state economy; about their own understanding of Statistical Process Control, a management technique widely used in Tennessee's new transportation industry; and about the impact of these issues on Tennessee management practices, labor relations, and wages.

Transportation Industry Effect on Tennessee

In the initial question, panelists were asked what effect the increase in transportation manufacturing employment would have on the Tennessee economy.

Ninety-eight percent of the panelists felt that the increase in transportation manufacturing employment would have a beneficial effect on Tennessee's economy:

"positive" . . . . . 61 percent
"extremely positive" . . . . . 37 percent
"no effect or negative" . . . . . 2 percent

Although there were no differences in this response pattern by geographic regions of the state, the response was more variable within industrial sectors as shown in Figure 5. Respondents from the finance and trade sectors were more positive than those from manufacturing, and all were more positive than executives in the composite "other" category.

Comments on this question were given by 150 of the 176 executives on the 1986 Outlook Panel. Following is a representative sample:

I view these as major manufacturing facilities and as durable goods, rather than solely as transportation plants. In this light, they are a significant addition in terms of modern, automated manufacturing facilities. Technically, they will show many existing manufacturing plants what can be done in a new state-of-the-art plant. Additional importance will come with the addition of satellite plants by suppliers for just-in-time delivery of components. Overall, these plants are truly a major step in providing growth and employment opportunities in Tennessee. **An East Tennessee Manufacturer**

Overall, these new plants will be very positive for Tennessee for the following reasons:

- *Heightened awareness that Tennessee is an attractive place for business to locate*
- *Improved employment – both in terms of reducing unemployment and reducing underemployment*
- *Increased per capita income; consumer spending will also increase as a result*
- *General increase in economic activity.* **A Banker from Middle Tennessee**

The new plants boost our opinions of ourselves. That's good. They are visible and therefore will help Tennessee to be regarded more seriously. **A West Tennessee Service Sector Executive**

To be sure, there are some reservations about single-industry dominance, potential inflation, high wages and a base for union labor as illustrated by the following:

I feel the long-range effects will be positive – higher wages, solid employment and other industries drawn to the area. In the short range, during construction and relocation, there will be some increase in inflation and higher local taxes in the immediate area. **An Insurance Executive from Middle Tennessee**

About 75 percent of all the firms that report using Statistical Process Control are in manufacturing.

New industry will help fill the vacuum created by continuing decline in the farm economy and jobs lost in domestic, textile and shoe industries. The concentration of two or three major auto-truck plants will make it economically attractive for major parts suppliers to locate nearby. A possible negative effect would occur if the UAW gained a stranglehold on these industries. **A West Tennessee Manufacturer**

The new auto manufacturing plants are a plus and indicative of the geographical, economic and political attractiveness of Tennessee for manufacturing, and should result in much auxiliary industry. The downside is that massive assembly line production generates cyclical employment. To the extent that labor is shielded by innovative new contracts, assuring a more dependable annual income, these new industries could be effective examples for future employer-employee relations. Otherwise, Tennessee could have the problems of Peoria, Illinois, which is excessively dependent on a single, "world-class" industry, like Caterpillar. **An East Tennessee Construction Industry Executive**

Management Practices – Statistical Process Control

Plants such as Nissan U.S.A. in Smyrna, Tennessee, are viewed by some people as providing different models for management and labor relations. For example, management methods which employ Statistical Process Control (SPC), and which increase labor's voice in management – so-called "shared management" – are being used at Nissan and other manufacturing companies in the state. One of the questions the Outlook Panel members were asked about these practices was:

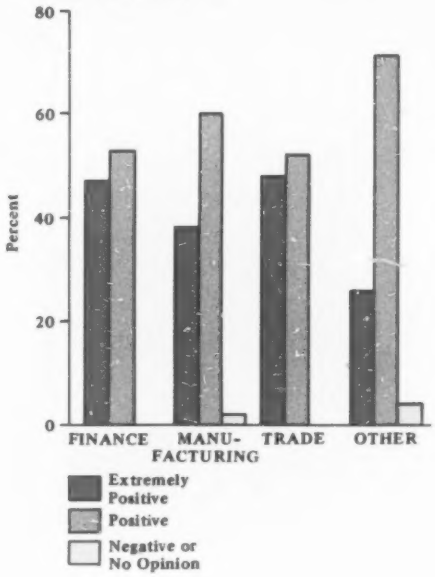
Q: "Do you have experience in the Statistical Process Control style of management?"

A:
- *"I know very little about it." . . . . . 40 percent*
- *"No, but I've read about it or discussed it with people who use it." . . . . . 35 percent*
- *"Yes, we use it, in whole or in part." . . . . . 25 percent*

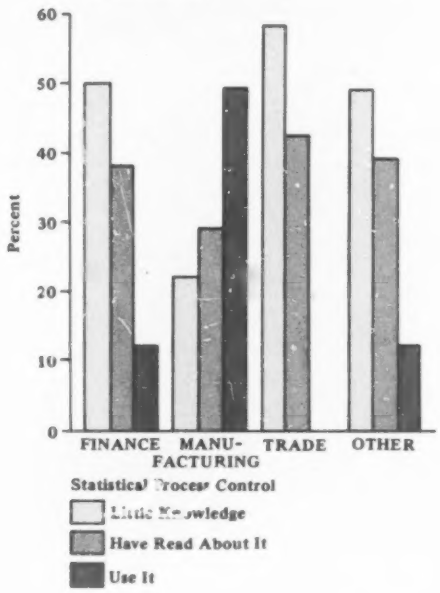
Responses to this question vary with region of the state and industrial sector. The distributions by industrial sector are shown in Figure 6. Use of SPC is heavily concentrated in manufacturing. About 75 percent of all the firms that report using this management style are in manufacturing. Within the manufacturing sector itself, 50 percent report that they use this management style, another 30 percent are familiar with SPC, and only 20 percent report that they know very little about it. At the other extreme are those in the trade sector, where 60 percent report little knowledge of this style of management, 40 percent indicate that they are familiar with it, and none of the respondents from this sector use SPC.

There is less variation by region, except in West Tennessee, where there is less familiarity with this style of management, than in the other two regions. Fifty-one percent of the West Tennessee respondents reported little familiarity with this style of management, compared with 39 percent for Middle and 34 percent for East Tennessee panelists. This regional bias cannot be explained simply by the difference in the distributions of responses by industrial sector. Even though West Tennessee respondents report less familarity with this style of management, a substantial proportion of them are in manufacturing, where use of this style is concentrated, and a small fraction in trade, where the style is least used and known.

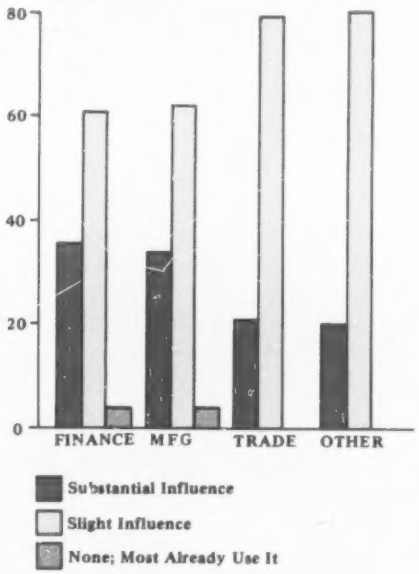
5. Panelists' view of the effect of the anticipated increase in transportation manufacturing employment
(percentage of panelists responding by business sector)



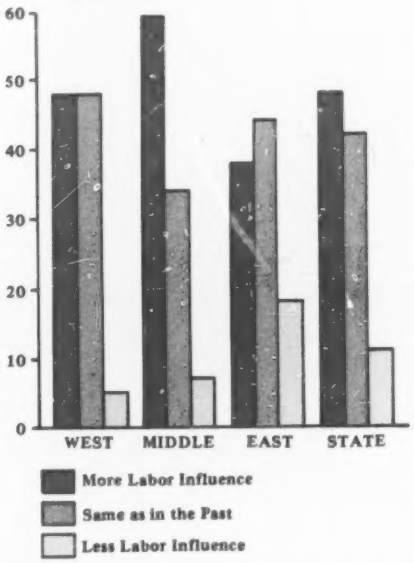
6. Panelists' knowledge and use of management methods that employ statistical process control
(percentage of panelists responding by business sector)



7. Panelists' expectations for the influence of the increased presence of a "shared management style" on firms which now use other management methods
(percentage of panelists responding by business sector)



8. Panelists' expectations regarding the future influence of organized labor as compared to past influence
(percentage of panelists responding by geographic area)



Shared Management

Shared management is generally considered a central part of Statistical Process Control. Much of Tennessee's new transportation manufacturing industry is based on a shared management concept – one in which management and labor work together to identify and solve production problems. Panelists were asked:

Q: "Will the presence of this management style, including its present use at Nissan and proposed use at the GM Saturn plant, influence other firms to adopt similar management methods?"

A: "Yes, substantially". . . . 28 percent
"Yes, slightly" . . . . . 70 percent
"No, most firms already use it" . . . . . 2 percent
"No, this method is counter-productive" . . . . . no response

There is little variation in panel response by region of the state, but substantial variation among industrial sectors as shown in Figure 7. About 35 percent of the respondents in both the financial and manufacturing sectors report that "the presence of this management style, including the GM-Saturn plant" will substantially influence other firms to adopt similar management methods. Panelists from the trade and "other" sectors predicted less influence, with about 20 percent of each group reporting substantial influence.

Labor Management Relations

After panelists were reminded that GM-Saturn would be a union plant, they were asked their views on labor-management relations in Tennessee in the future. Responses are shown in Figure 8. Statewide, 47 percent of the panelists said that organized labor would have more influence than in the past; 42 percent said labor's influence would not change; and 11 percent thought that labor would have less influence. As also shown in Figure 8, there is some variation by geographical region. Sixty percent of the panelists from Middle Tennessee expect that labor's influence will grow, while about 60 percent of the East Tennessee panelists feel that labor's influence will remain the same or decline. West Tennessee panelists are about evenly split between more influence and equal or less influence.

Statewide, 47 percent of the panelists said that organized labor would have more influence than in the past.

In industrial sectors, respondents from manufacturing saw the influence of labor unchanged from the past, those from finance and trade expected labor's influence to increase, and those from the "other" category also expected the influence to increase, but a smaller percentage of them checked this response.

Wages

The last question asked Outlook Panelists was as follows:

Q: "Will high wages in transportation manufacturing put pressure on other employers to raise wages?"

A: "Yes, and it's a good thing." . . . . . 35 percent
"Yes, and it's a bad thing." . . . . . 42 percent
"No, and it's unfortunate." . . . . . 5 percent
"No, and it's good; wages are high enough." . . . . . 18 percent

As indicated by the first two responses, 77 percent of the executives on the panel anticipated upward pressure on wages, though they were about evenly divided as to whether that is good or bad. Sixty percent of the Outlook Panel feels that "upward pressure on wages is not desirable," when the second and fourth responses are interpreted together.

There is little variation in the distribution of panel response across regions or industrial sectors, although finance sector executives tended to anticipate more upward pressure on wages than panelists from the other industrial groups. Also, a greater proportion of Middle Tennesseans, as opposed to panelists from either of the other two regional divisions, believed that "upward pressure on wages is not desirable."

OUTLOOK PANEL VIEWS OF A TENNESSEE SITE FOR MONITORED RETRIEVABLE STORAGE

The U.S. Department of Energy is considering three sites in Tennessee for a nuclear waste repackaging and storage facility. This facility, Monitored Retrievable Storage (MRS), would be the only location in the country for repackaging and storing waste from nuclear power generators. At this site, waste would be put into stainless steel casks and temporarily stored until it could be moved to a permanent storage site in a western state.

As part of a more comprehensive study by CBER of the economic effects of an MRS site in Tennessee,[2] the 176 executives on the 1986 Outlook panel were asked to respond to a series of questions on this issue. First, to what extent, if any, would business location decisions be affected by the location of an MRS in Tennessee? Second, what effects might the MRS facility have on the ability of nearby firms to attract and retain employees? Third, to what extent are businesses sensitive in their location decisions to compensating factors? Fourth, what is the perception of the Tennessee business community regarding the most appropriate public policy toward the MRS by the Tennessee state government? And, finally, what bounds does the Tennessee business community place on the perceived risk of the MRS facility?

The MRS issue should not be evaluated based solely on the responses of the business panel as reported here. These

2. For more detail on this and other economic aspects examined see "An Economic Analysis of a Monitored Retrievable Storage Site for Tennessee," Final Report, December 10, 1986. William F. Fox, Project Director. Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville. Available from CBER or the Tennessee Department of Economic and Community Development, through which the study was contracted.

results are a small part of the total economic analysis cited earlier (see footnote 2.) Also, there were numerous other State of Tennessee-coordinated studies considering a wide range of MRS aspects. These studies are available to the interested reader through the Safe Growth Cabinet Council, Governor's Information Office, Nashville.

The Effect on Business Location Decisions

To begin with, location decisions are determined by obvious factors such as the price of land, capital, labor, and transportation costs in the region as well as by "environmental" factors such as the quality of the air and water, proximity to LULUs (locally unattractive land uses), and the quality and access to public services. Accordingly, several questions were included to determine whether, and to what extent, these environmental factors might manifest themselves if an MRS facility were to locate in Tennessee.

When asked about their own location decisions, only a very small proportion (6 percent) of the executives considered the MRS an advantageous factor in evaluating a location site, whereas a sizeable proportion (39 percent) indicated that the MRS would not be a factor in any relocation decision. The majority of the panelists (56 percent), however, indicated that the MRS would be a negative factor in their locational decisions; and about one-third of those whose responses were negative suggested that regardless of other desirable features associated with the location, they would not consider locating in the same area as an MRS.

When asked to evaluate the ability of the MRS county to attract new business, almost two-thirds of the respondents indicated that the MRS would be a deterrent. Another 26 percent indicated that they did not foresee the MRS affecting the attractiveness of the MRS county, and only 10 percent believed that the location of an MRS in a county would help attract businesses to the area.

In another related question, a majority (56 percent) indicated that the MRS facility would influence firms based in the MRS county to relocate elsewhere,

Fifty-six percent of the panelists indicated that the MRS would be a negative factor in their locational decisions.

The Effect of Physical Proximity

Responses on business location decisions are somewhat sensitive to the physical proximity to the MRS facility. For instance, when considering whether the MRS facility would affect their locational choice, the proportion of executives answering that the MRS facility would not enter their decision criteria increased from 39 percent to 51 percent as the facility was hypothetically moved 50 miles away and then to 56 percent when it was moved 100 miles away. Also, most respondents (74 percent) indicated that transportation of nuclear materials within five miles of their plant would *not* affect their location decisions.

Responses varied significantly by industry. In particular, panelists from the financial sector indicated the strongest aversion to location in the MRS area, followed by manufacturing executives. Trade sector panelists showed the least serious aversion to locating in the MRS area. To the extent that finance and manufacturing employment lead the development of trade-related jobs, the more aggregated grouping of responses may understate the downward sensitivity of business location decisions to the presence of an MRS.

The MRS and Labor Market Conditions

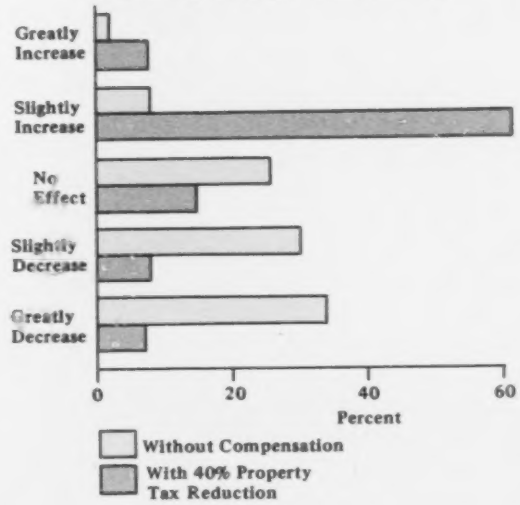
When asked about the relationship between the MRS and local labor market conditions 35 percent of the panel foresaw no impact of the project on local labor markets. Another 59 percent predicted that locating the MRS in Tennessee would harm the ability to attract employees. It is also interesting to note that as the facility was hypothetically moved from the immediate vicinity to 50 miles away and 100 miles but a large number (42 percent) also suggested that they did not think the MRS would affect the desire by MRS county-based firms to relocate. away, the number of panelists who saw no impact on the labor market as a result of the MRS increased from 35 percent to 53 percent to 76 percent.

Property Taxes and Business Location

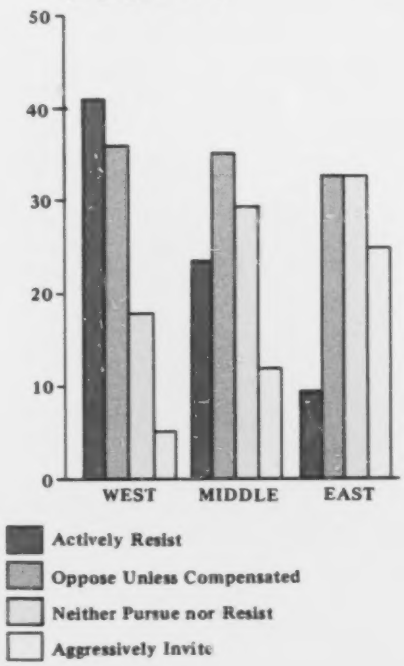
It is quite likely that compensation to the state and local community for its willingness to accept the MRS may be forthcoming in a variety of forms, e.g., the MRS facility is likely to provide either direct or indirect support for the local tax base. In order to get some notion of the sensitivity of business location decisions to MRS compensation, we asked business executives to evaluate how their location choices might be affected by changes in the property tax rate.

Results suggest that the attractiveness of the MRS area to relocating businesses may be quite sensitive to large changes in the tax rate. This sensitivity is illustrated in Figure 9 in a comparison of two questions in the survey, which asked business leaders to assess the ability of the MRS county to attract new business from outside the area. The only difference in these questions is that the second posed the hypothetical situation that property tax rates would be reduced by 40 percent. The comparison suggests that a 40 percent decrease in the property tax rate would significantly shift the distribution of responses. In the earlier question, when no compensation or public sector changes are hypothesized, 65 percent of the respondents believed that the MRS would, to some degree, harm the ability of the local community to attract new businesses. Once a 40 percent reduction of local property taxes to accompany the MRS facility was hypothesized, only 15 percent of the respondents continued to believe that the MRS facility would discourage new businesses from locating in the host community. Moreover, nearly 70 percent of the respondents believed that the MRS county would make it

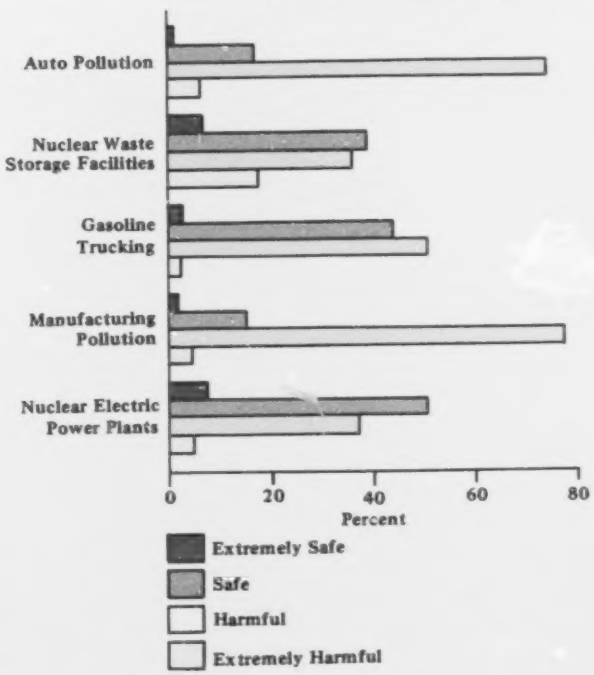
9. Panelists' perceptions regarding the attractiveness of the MRS county to a business location decision, with compensation and without compensation
(percentage of panelists responding)



10. Panelists' recommendations on the state's alternatives regarding the location of an MRS in Tennessee
(percentage of panelists responding by geographic area)



11. Panelists' assessment of risks associated with selected activities
(percentage of panelists responding)



Although 22 percent of the panelists indicated the state should use every means at its disposal to resist the MRS, 16 percent believe the MRS should be invited to locate in Tennessee.

somewhat easier to attract new businesses if there were a reduction in property taxes.

Relocation Sensitivity to Compensation

Similarly, when asked to evaluate the desire by MRS county-based firms to relocate as a result of the MRS project, business executives suggested that this desire might be quite sensitive to large property tax rate changes. In the earlier question, 56 percent indicated that the MRS would increase the relocation desires of these local firms. When compensated by a 40 percent tax reduction, however, only 18 percent thought the MRS/low tax combination would increase local firms' relocation desires. The bulk (65 percent) of the panelists believed that the MRS/low tax option would decrease the relocation desires of the local firms.

While these results definitely suggest some sensitivity of new business formation to large changes in the local property tax rate, several points should be kept in mind. First, the sensitivity of new business formation may change substantially for smaller tax changes. Secondly, this sensitivity of the ability of the MRS community to attract new business with offsetting property tax decreases may vary substantially, depending on the type of business making the relocation decision. We expect a greater willingness to consider the low-tax/MRS community by businesses that currently have large property tax assessments. These are likely to be manufacturing and commercial rather than service-oriented firms. Third, the sensitivity of business relocation decisions to the hypothesized tax changes does not necessarily indicate a similar sensitivity of business location decisions to other forms of compensation or other changes in public sector services that may accompany the MRS. Finally, economic research indicates that property tax differentials tend only to shift business across a small geographic area rather than across state lines.

State Public Policy

Given the vast uncertainty regarding the technical and socio-economic impacts of an MRS on the state of Tennessee, even the best informed official will face a significant amount of uncertainty regarding the benefits and costs of the MRS facility. The only way to really determine if the benefits of a Tennessee-based MRS exceed the costs of such a facility is to let the MRS be built and operated in Tennessee. But to do this would invite the risk that realized benefits are far short of realized costs. Thus, this year's survey of Tennessee business leaders included a question on the appropriate approach for the state of Tennessee to take regarding the MRS facility. Panel response statewide was that state government should:

"aggressively invite the MRS to locate in the state" . . . 16 percent

"neither pursue nor resist" . . . . 28 percent

"oppose the MRS and accept (yield) only if offered compensation" . 34 percent

"use every means to resist the MRS". 22 percent

Panelists' opinions do not reflect anything near a consensus on this issue. Twenty-two percent indicated that the state should use every means at its disposal to resist the MRS. On the other hand, nearly 16 percent of the respondents believe that the state should aggressively invite the MRS to locate in the state. Interestingly, business attitudes toward the state's MRS policy vary significantly by the respondents' geographical home base. In Figure 10 we see that executives from East Tennessee were significantly more positive regarding the MRS than were panelists from Middle and West Tennessee. For instance, 41 percent of West Tennessee executives believe that the state should resist the MRS at all costs. This group compares to only 9 percent of East Tennessee panelists, and 24 percent of Middle Tennessee panelists, who favor a state policy of vigorously opposing the MRS. On the other end of the spectrum, 25 percent of East Tennessee executives believe that the state should vigorously pursue the MRS. Only 5 percent of West Tennesseans favor such a policy.

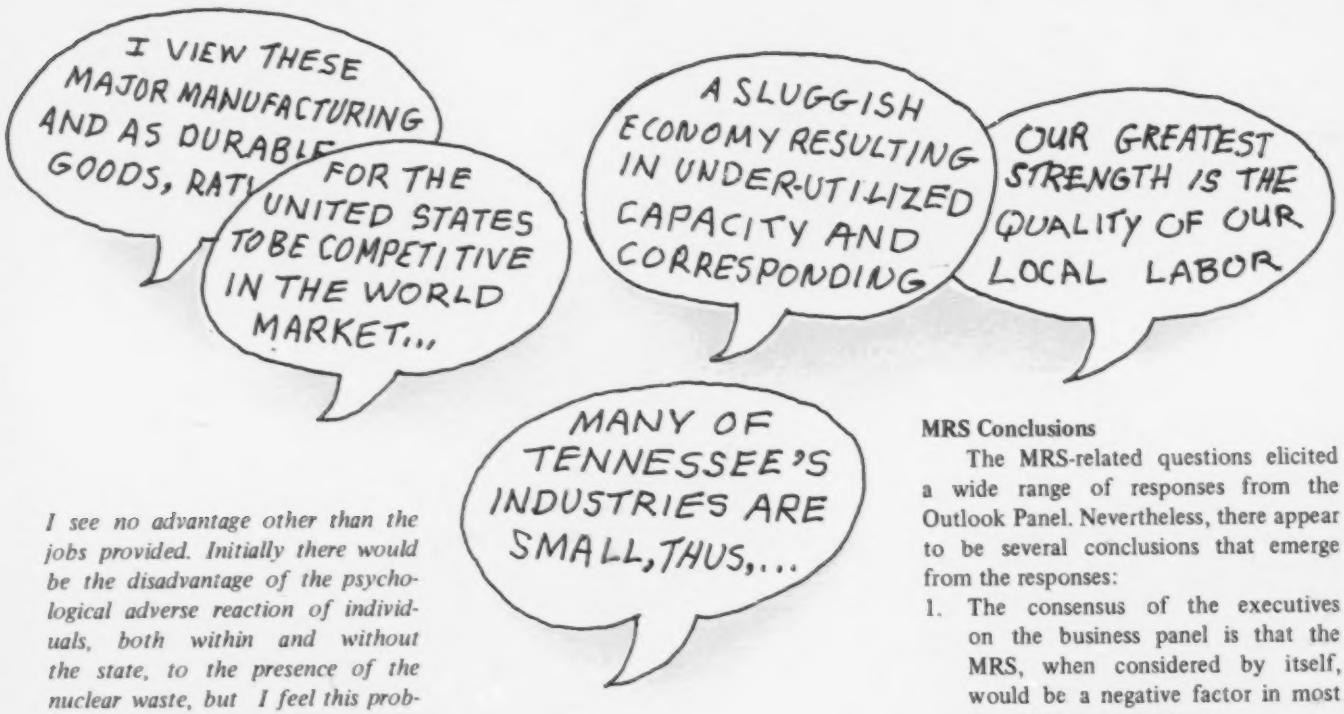
A sample of typical comments received from outlook panelists reflects the widely divergent opinions regarding appropriate State policy:

Much of the ballyhoo is due to the news media – T.V. and newspaper primarily – who continually keep this "controversy" before us. I feel confident that proper controls for safety are being followed and that no more risk of life is present with or without a nuclear facility. **A Middle Tennessee Banker**

This is a negative industry fed by mistrust created by previous misleading governmental statements on testing power plant accidents, etc. Our citizenry is uneasy about anything "nuclear" and an MRS location should be rejected. **A Trade Sector Panelist from East Tennessee**

The only advantage would be economic compensation – not enough in my estimation. **A Middle Tennessee Educator**

As a leader in nuclear energy, Tennessee should aggressively pursue this new major industry. The state has the technology, expertise and people to handle an MRS also. Oak Ridge needs the employment. The only reservation I have is that sufficient steps be taken to absolutely ensure against the existence of a permanent "temporary" facility. **An East Tennessee Manufacturer**


I VIEW THESE MAJOR MANUFACTURING AND AS DURABLE GOODS, RATY
FOR THE UNITED STATES TO BE COMPETITIVE IN THE WORLD MARKET...
A SLUGGISH ECONOMY RESULTING IN UNDER-UTILIZED CAPACITY AND CORRESPONDING
OUR GREATEST STRENGTH IS THE QUALITY OF OUR LOCAL LABOR
MANY OF TENNESSEE'S INDUSTRIES ARE SMALL, THUS,...

I see no advantage other than the jobs provided. Initially there would be the disadvantage of the psychological adverse reaction of individuals, both within and without the state, to the presence of the nuclear waste, but I feel this problem would be of small consequence in the beginning and would entirely disappear in time. **A Manufacturer from West Tennessee**

The risk is too high and the new jobs would not compensate for this risk. **A Middle Tennessee Banker**

The idea that the MRS would store waste until a suitable site is developed in a western state seems to me to be a set-up. The site in the western state will be a long time coming – maybe never. Meanwhile, we get it all pouring into our state. Let us not be deceived. We should not allow it to happen. **A Manufacturer from West Tennessee**

I think the negative publicity concerning nuclear waste has been blown out of proportion by the media. Accidents, i.e., Three Mile Island, are preventable with strict control of regulations. More money and time should be spent in discussing the positives of nuclear usage and how radioactive waste disposal and handling is not dangerous to the public if done properly. **A Middle Tennessee Manufacturer**

Safety Perceptions

To get some notion of business perceptions regarding the safety of the MRS facility, the survey asked Tennessee businessmen to provide their views on the relative safety of various activities that could be encountered by Tennesseans. Specifically, the panelists were asked to evaluate the safety of pollution from cars, trucks and buses, nuclear waste storage facilities, trucking of gasoline, pollution from manufacturing plants, and nuclear electric power plants. A breakdown of respondents' views is given in Figure 11.

Here we see that the perceptions about the riskiness of the MRS acility are somewhat polarized. If we consider all categories of harmful activities together (slightly, moderately and extremely), then respondents would appear to be more concerned about the risks associated with pollution from automobiles and manufacturing facilities than from nuclear waste. On the other hand, if we focus only on the "extremely hazardous" ranking, it becomes clear that a significantly higher proportion of the respondents believe nuclear waste disposal is extremely harmful, more than any other activity.

MRS Conclusions

The MRS-related questions elicited a wide range of responses from the Outlook Panel. Nevertheless, there appear to be several conclusions that emerge from the responses:

1. The consensus of the executives on the business panel is that the MRS, when considered by itself, would be a negative factor in most firms' location decisions.
2. Panelists believe that the attractiveness or unattractiveness of the MRS community may be quite sensitive to large changes in the local property tax rate. The survey did not address the sensitivity of relocating businesses to small tax changes or other forms of compensation to the host community.
3. According to the Panel, an MRS would, in all likelihood, detract somewhat from the ability of MRS community-based firms to attract labor. The geographical extent of this effect is likely to be limited.
4. Public policy opinions of the panelists vary widely. In general, East Tennessee business leaders are less opposed to the MRS than are the West Tennessee business leaders.
5. The MRS-related risks perceived by the Tennessee executives on this year's business panel are polarized. While nuclear waste does not rank highly on the (perceived) hazardous scale when all types of harm are considered, a higher proportion of respondents considered nuclear waste either extremely safe or extremely harmful compared to any of the other surveyed activities. ■

1986 PANELISTS COMMENT

EAST

A PRINTER: The full impact of the increased interest in Tennessee as a desirable industrial area will not be felt until beyond 1986. If the same vigor we have seen in the last four years continues in the future, we can regain a lot of the industrial growth lost to the Carolinas in past years.

A BUSINESS CONSULTANT: Clearly Tennessee's quality of life and work ethic are a strength. The poor education and provincialism of many of our residents and workers are a weakness.

A BANKER: I believe the general overall economic outlook for 1986 is bright. The work of the Governor and his departments has created a favorable business climate and a perception of Tennessee as a progressive, dynamic state reaching out and cooperating with the business community. There is much favorable comment concerning our progress in education, and again a perception of Tennessee as a leader. Our efforts in Japan as well as other Far East countries is obviously bearing fruit. If we keep and build on the present climate we should make steady and perhaps even dynamic progress.

A MANUFACTURING EXECUTIVE: I am an optimist by nature, and I feel next year will be improved over 1985. The fact that the Federal Government is addressing the two big, bad issues of (1) overspending and (2) unfavorable balance of payments is positive. Tennessee will be slightly better than average due to the new auto plant locations and the spin-off benefits associated.

A TRADE ENTREPRENEUR: Recent events will benefit Tennessee more than some of the other southeastern states for 1986. Weakness, if any, will be our school systems and their ability to provide a trainable work force.

A BUSINESS LEADER: Strengths: automotive and suppliers will expand rapidly; interstate transportation to move parts and supplies will expand. Service industries headquartered in Tennessee will continue to expand. There will also be expansion of foreign investment and control. Weaknesses: Interstate bank mergers will strip Tennessee of home-based financial institutions and corporate leadership. Textiles will remain weak without modernized plants and labor agreements; excessive conservatism will hinder reforms.

A PUBLIC UTILITY EXECUTIVE: Tennessee is obviously the "place to be" in modern America. We have the climate, the resources, the people of quality, and the attitude needed. We are very fortunate, indeed.

A MANUFACTURING EXECUTIVE: Tennessee is well positioned geographically and economically (with right-to-work laws). However, major improvements in capital markets and special talents are needed. The school program helps; Saturn helps; the U.T. Business School helps; Alexander helps. But the takeover of local banks by statewide banks is a major impediment developing for businesses residing outside the metropolitan areas. Bank decision makers are now remote in every sense of the word. Alexander's inaccessibility is a weakness. One legislator (of his party) described him as the most inaccessible governor of our time.

A GOVERNMENT EXECUTIVE: Tourism revenues will be strong due to Homecoming '86. And, coupled with that will be many curiosity seekers pertaining to Saturn! The dollars spent on Saturn and Dollywood, as well as other ongoing projects, will carry Tennessee well through 1986. Tennessee is evolving more and more as an "action state!"

MID

A FINANCIAL CONSULTANT: We expect the highly stimulative fiscal and monetary policy in 1985 to produce very strong national growth in 1986 that will affect Tennessee's cyclical industries.

A PUBLIC UTILITY EXECUTIVE: Overall outlook expected to parallel 1985 with some very depressed areas of severe unemployment in rural counties.

A MANUFACTURING EXECUTIVE: The strength area is greater diversification of business providing a stronger labor base. Our weak area, the infrastructure, is not expanding as fast as our business base, and we have not addressed the problem of how to fund the cost for an expanding service infrastructure base.

A MANUFACTURING EXECUTIVE: The State of Tennessee has many problems to face in 1986 (i.e., prisons, improved education, road improvement, service improvement) that will be very expensive to solve. The tax issue will be of major importance as a funding tool. Increases in the sales tax cannot go on indefinitely, and a new tax system must be installed. Many areas and people in Tennessee simply cannot afford additional increases in sales tax. Tennessee must face up to this issue no matter what the political dangers are.

AN INSURANCE EXECUTIVE: Strengths: geographic location, quality of people, relatively good government at state and local level, our natural recreational facilities. Weaknesses: our prison system, tax reform. We must have a state income tax with a reduction in our regressive sales tax.

AN ACCOUNTANT: The outlook for 1986 is positive. Tennessee has a reasonably diversified economy. Strengths are Saturn and the American Airlines

ON THE STATE OF OUR STATE

DLE

announcement for Nashville. Tennessee still has some manufacturing companies that will continue to be adversely affected by imports. In my opinion, interest rates are still too high to promote strong growth.

A PUBLIC UTILITY EXECUTIVE: Tennessee is at the heart of the southern industrial development boom. Good government, a strong work ethic and available sites are our strong areas.

A MANUFACTURING EXECUTIVE: Nissan, Toyota, and Saturn will bring in suppliers all over the state. It will start the last of '86 and really accelerate in '87. The state needs to plan for more people, better roads, and schools, now!

A BUSINESS LEADER: The national and world economic setting will permit only moderate increases here in Tennessee, but we'll do O.K. overall in the short run. In the long run, we're dependent on the U.S. getting its economic act together, without creating a social crisis.

A RETAIL TRADE EXECUTIVE: Capital expansion should be somewhat reserved (except for those projects like Saturn, Nashville Airport, etc.) until Congress passes a tax bill. Federal deficits will continue to compete with corporate fund needs. The uncertainty in those factors will probably cause a slight pause in Tennessee's economic growth. The area of prison reform could cause higher business taxes. The state's access to higher levels of general funding will continue to be placed upon business because the voters don't really care how high the real rate of taxation is as long as they don't have to see the cost being charged directly to themselves (income tax vs. higher prices to cover the pass-through of higher business taxes).

WEST

A FINANCE EXECUTIVE: The new automotive industries coming into the state should give us a boost economically. Let us not forget that we all eat well now, but with the average age of the farmers in this country at 54 years, and no incentive for young people to farm, it looks like corporation farming will be done in the future, then we will realize what a bargain we have had for our food dollar. I don't know what can be done about this.

A CONSTRUCTION SUPPLIER: Tennessee is a state with peculiar problems and opportunities. We have not yet become a "no-work", "something-for-nothing" state. We have some amazing strengths. These will be exploited in 1986 to Tennessee's advantage but not nearly as much as is needed.

AN ACCOUNTANT: Strength: Favorable "fallout" and the impact of Saturn's announcement provide a psychological advantage to the state's aura as an attractive place to conduct business. Weakness: Fiscal inability of state and local governments to provide necessary services to expanding economy because of antiquated and lethargic system of taxation.

A PUBLISHER: Tennessee should fare somewhat better than the nation as a whole. Among the spillover benefits from the announcement of the Saturn plant is the tremendous amount of publicity the state received. This . . . should give a boost to our economic development efforts.

A BUSINESS LEADER: Tennessee's economic outlook is on the upward side – the new auto plants have given the general feeling of economic growth. When everyone is optimistic it reflects in actual growth.

A MANUFACTURING EXECUTIVE: There appears to be a softening in the textile industry which is important to Tennessee. If the Federal Government seriously addresses the problem of the growing deficit then it will noticeably impact Tennessee through cutbacks to defense spending, Oak Ridge, and social programs.

A MANUFACTURING EXECUTIVE: I expect 1986 to be more stable than 1985 [in Tennessee]. Government-Business relations remain good. The interest rate remains too high, while the inflation rate remains low and stable. Major areas of concern are the farming profession, prisons, unemployment and high interest rates.

A BUSINESS LEADER: We are increasingly becoming a "bargain" state: surpluses of low skilled/semi-skilled labor, empty manufacturing and office facilities continue to drive labor and overhead costs down. Mix these factors with favorable utility rates, increased government cooperation, convenient transportation and moderate climate. These factors must be on all Fortune 500 firms' list for prime consideration when expansion is warranted.

A BUILDING MATERIALS MANUFACTURER: I see 1986 as a repeat of '85. This is positive, because while things have been a lot worse, they have never been much better. A big jump in available employment would either put stress on wages and employee relations (union situations), or it would bring in new people to fill the jobs. Our greatest strength is the quality of our local labor and our governor. Our weakness is our state situation – taxes, prisons, schools, etc. Sometimes I think, "Is it really that bad?" And I have to admit it is!

U.S. OUTLOOK: ECONOMY ON THE MOVE, BUT WHICH WAY?

John W. Mayo,
with Agriculture Outlook by
Irving Dubov

The current outlook for the U.S. economy is clouded in the short run by an abundance of mixed economic signals and in the longer run by large uncertainties regarding key policy parameters. However, during the past few months there have been signs that the long-awaited speed-up of economic growth is emerging. One encouraging sign is the October 18, 1985 revision of the Commerce Department's estimate of the third quarter growth in Gross National Product to 3.3 percent, up from a paltry 0.3 percent in the first quarter and 2.0 percent in the second quarter. Also heartening are recent unemployment statistics indicating a decline in the unemployment rate from 7.3 to 7.0 percent. Current declines in the interest rates also raise the potential for increased investment and consumer spending. Finally, the accord reached among the major industrial countries to intervene in international money markets has boosted expectations about economic growth.

It seems, however, that for every reason to be optimistic about economic growth, there is another reason to be cautious. From an historical perspective, the U.S. is certainly toward the end of the growth phase of the business cycle. Post-war recoveries have lasted for an average of 15 quarters, and as of the fourth quarter of 1985, the economy has enjoyed sustained economic growth for 12 quarters.

Retail sales in October declined a whopping 4.2 percent, very large by historical standards (though at least partially the result of strong auto sales in September). November sales rebounded somewhat; however, this softening of consumer spending was not a good omen for the peak retail season between Thanksgiving and the New Year. Finally, the relatively rapid decline in the value of the dollar has raised fears about the emergence of import inflation.

In the longer run there are several key policy issues that raise significant questions about both the level and nature of economic growth in the U.S. Foremost among these issues are the staggeringly large federal budget deficits, the possibility of major tax reform, and the ability of the U.S. to stabilize and reduce the balance of trade deficit.

Consumption

An increase in both personal income and consumption in 1985 has clearly helped maintain the current recovery. The relevant question for the economic outlook is whether we can expect continued increases in consumer spending. In total retail sales for 1985, early year increases in consumer sales were followed by a volatile pattern in the third and fourth quarters. During October, retail sales declined 4.2 percent and rebounded a modest 1.1 percent in November.

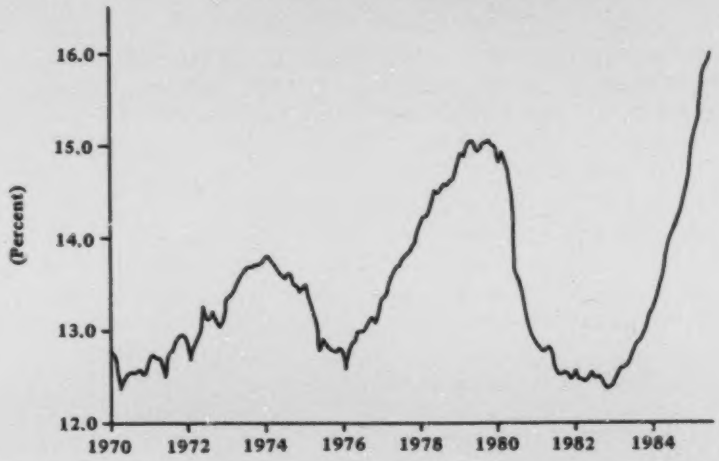
Although recent surveys suggest that consumer confidence remains high, there are some ominous signs about consumer spending. The primary problem has been that consumer spending has substantially outpaced the growth of personal income in recent months. Over the past three quarters, income is up only one-seventh as much as consumption.

With consumer spending outpacing increases in personal income, the savings rate has dropped to historically unprecendented levels – from 2.7 percent in August to 2.5 percent in September. Over the third quarter the savings rate averaged a record low 2.9 percent. The decline in the savings rate over the past year suggests that the saving pool is not likely to be a significant source of spending during the coming months. At the same time that the savings rate has been declining, consumer debt as a proportion of personal income has increased sharply. In Figure 1 we see that this ratio typically rises prior to recessionary periods and falls during the recessions. This pattern occurs because increased consumer debt is generally followed by consumer retrenchment.

Together, the decline in the savings rate and the sharp increase in consumer debt suggest that consumer spending will slacken in the coming year. For 1985 real consumer expenditures will grow by

FIGURE 1

U.S. CONSUMER DEBT AS PERCENT OF PERSONAL INCOME



4 percent. This will fall to a more modest 2.5 percent in 1986 as consumers retrench on spending in order to get their household budgets in order. For the longer run, inflation-adjusted consumption should grow in the 2 to 3 percent range annually for the remainder of the decade.

Investment

Investment occurs in three forms: business fixed investment, residential investment, and inventory investment. To varying degrees, each of these forms of investment depends upon the level of aggregate economic activity, real interest rates and the tax environment.

During the first half of 1985 the combination of reduced economic profits and high real interest rates acted to depress somewhat the total level of investment. The interest rate declines over the course of 1985, together with higher third quarter profits, have recently shed a more positive light on the investment outlook. Business fixed investment, which is the largest component of investment, should grow by 6.1 percent during 1985. This is a decline from the 19.8 percentage growth last year, but is nevertheless quite respectable. Residential investment, which consists largely of investment in housing, has been rather lackluster, especially given that the interest rate declined during early 1985. Real investment in residential structures will increase by only 2.2 percent in 1985, after increasing over 12 percent the year before.

The outlook for investment growth is a modest 2.2 percent in 1986. To understand this modest growth we need to examine the three key determinants of investment growth: interest rates, aggregate economic activity (which helps determine profits), and the tax environment. Reduced inflation should allow interest rates to decline further over the next couple of years. For instance, the Moody's AAA corporate bond rate, a key determinant to firms' cost of capital, is forecast to decline from 11.5 percent in 1985 to 10.4 percent in 1987. On the other hand, the slowdown in consumption growth and leveling off of the national capacity utilization rate will keep business investment growth moderate. No significant changes in the business tax environment are anticipated. For similar reasons, no boom is likely to be forthcoming in housing investment. While this industry has traditionally been interest-rate sensitive, there are some signs that flexible-rate mortgages have reduced that sensitivity somewhat. Consider, for instance, the fact that rates on conventional loans have fallen from 14.5 percent to 12 percent over the past year, and rates on adjustable mortgages have fallen to the 10 to 10.5 percent range. Yet despite these declines, we have not seen a robust growth in housing sales or housing investment, possibly because of a changing mix of mortgages. Last year nearly two-thirds of all home buyers took out flexible-rate mortgages. This year many home buyers are signing up with fixed rates instead, trading off the higher interest rates for reduced uncertainty. This changing mix means that the effective mortgage rates have not fallen as much as they nominally appear.

The long-run outlook for investment growth is currently clouded by large uncertainties about federal budget deficit reduction and the impact of possible tax reform on the cost of capital. Positive economic growth and slightly declining real interest rates for the remainder of the decade, however, should provide room for investment growth in the 5 to 6 percent range for 1987 and beyond.

Government

Government spending currently constitutes 24 percent of gross national product, making the contribution of the government sector second only to consumption (ahead of investment) in terms of share of GNP. Figure 2 shows the share of federal government spending (GNP) for the 1977 to 1984 historical period and the 1985-1986 forecast period. From the figure we see that from 1977 through 1979 the share of government spending relative to total economic activity declined, while from 1980 to 1982 the size of government spending relative to GNP expanded rapidly. This was a combination of two phenomena. First, recession-related expenditures increased sharply over the latter period as the country faced the most severe recession since the Great Depression of the 1930s. Second, while growth in many areas of government spending was slowed over this period, the two largest budget items – defense and social security – increased by 37 and 32 percent, respectively. With the resumption of economic growth in

Severely restrictive budget cuts or tax increases may very well be mandatory even in periods of slow economic growth under the Gramm-Rudman approach.

1983, recession-related government spending slowed, ending the upward trend in government's share in GNP. Since 1983 the share of federal government spending has declined slowly and is forecast to continue to do so. With essentially no movement on the tax side of the public sector ledger, the relative stimulative effect of federal fiscal policy should be reduced somewhat for the next two years as the government share of GNP falls.

The Gramm-Rudman Plan

While it was not explicitly or implicitly included in our econometric modeling, the recently passed legislation known as the Gramm-Rudman Deficit Reduction Plan is likely to play a significant role in national public finance for several years to come. After a grueling and unsuccessful year of attempts to fashion a deficit reduction plan that addressed the merits and costs of individual federal programs, the Congress and the President have opted for a much more mechanical approach toward deficit reduction. In essence, the Gramm-Rudman approach sets budget deficit targets of $144 billion in FY 1987, $108 billion in FY 1988, $72 billion in FY 1989, $36 billion in FY 1990, and by FY 1991, the budget must be balanced. In all years, except 1991, when no leeway is allowed, the deficit may exceed the target by up to $10 billion without triggering mandatory budget cuts. Once triggered, however, budget cuts must be sufficient to meet that year's target.

In general, one-half of any triggered budget cuts will be from the defense budget and one-half from non-defense programs. Some programs, however, are exempted from the budget cuts. These include Social Security, Medicaid, Aid to Families with Dependent Children, the Women's, Infants and Children's Nutritional Program, Supplemental Security Income, food stamps, veterans' pensions, and interest on the public debt.

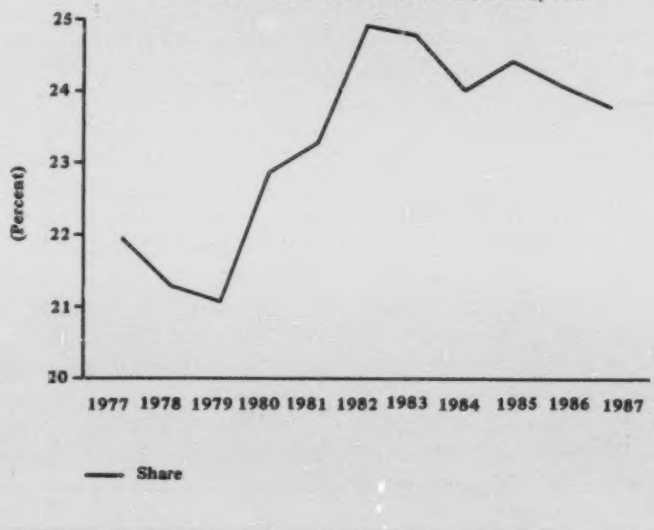
The mechanics of the newly passed bill are that in August of each year the Office of Management and Budget and the Congressional Budget Office will submit estimates of the deficit for the upcoming fiscal year. If the Government Accounting Office certifies that the deficit will exceed the deficit target by more than $10 billion, it will draft an across-the-board set of budget cuts to meet the mandatory target. On September 1, 1986, the President will issue an order imposing the budget cuts, but they will not go into effect until October 15. During this six-week period, Congress may reach the deficit reduction target by enacting its own program of budget cuts, tax increases, or both.

Should the Gramm-Rudman approach withstand a pending constitutional challenge, the size of budget deficits will certainly fall. The total impact of the bill on aggregate economic activity, however, is far from clear. On one hand, a runaway federal budget deficit with the national debt doubling every four years simply cannot be tolerated much longer. Gramm-Rudman would end the era of $200 billion deficits. On the other hand, a flexible and responsible fiscal policy is at the heart of any federal-based counter-cyclical economic policy. Severely restrictive budget cuts or tax increases may very well be mandatory even in periods of slow economic growth under the Gramm-Rudman approach. Such budget cuts or tax increases are likely to exacerbate any recessionary tendencies that the economy might have.

Outlays of state and local governments, relative to total economic activity, have declined, more or less continuously, since 1977. Most state and local governments are legally prohibited from running deficits; therefore, in 1985 the combined surplus of these governments will be $50 billion. The outlook for state and local governments is that they will continue to maintain their current posture relative to total economic activity. Accordingly, we do not foresee particularly strong fiscal stimuli from the public sector in the next few years.

FIGURE 2

FEDERAL GOVERNMENT OUTLAYS/GNP



Tax reform. In the closing days of the recent Congressional session, the House of Representatives passed the Ways and Means Committee tax reform bill. Should the bill, or a derivative of it, pass the Senate and be signed into law, its effect on aggregate economic activity is highly uncertain. Some have claimed that the Ways and Means bill results in a higher cost of capital (primarily because it eliminates the Investment Tax Credit) and will reduce investment and economic growth. However, the relationship between tax reforms, aggregate investment and economic growth is highly complex, therefore, no adjustments are explicitly made in the forecast to account for the possibility of major tax reform. The most likely case is that the effects of tax reform on aggregate investment would be small and not begin until the late 1980s or early 1990s.

International Trade

The short-run impact of international trade on overall economic activity is illustrated by the difference between exports and imports. When exports exceed imports there is a net stimulus to the economy from international trade, and when imports exceed exports the international trade sector is a net drag on the economy. The impact of international trade on U.S. economic activity is seen in Figure 3, where we see trade surpluses and deficits for the 1975 to 1985 historical period and for the 1986-1988 forecast period. Throughout the latter half of the 1970s and the early 1980s the U.S. ran a net trade surplus. However, the surplus peaked in 1975 and has fallen since, with a net trade deficit beginning in 1983. For the past three years the trade deficits have grown dramatically as a result of skyrocketing imports and stagnant exports.

The trade deficit has increased sharply over 1985 and is expected to reach $130 billion for the year (current account balance). This means that U.S. firms and citizens will send $130 billion more abroad for imports than foreigners will send to the U.S. for our goods and services. Moreover, the outlook for 1986 and beyond is not favorable for our balance of trade. In 1986 the (current account balance) trade deficit is expected to remain at $130 billion.

During 1985 the trade-weighted value of the dollar has fallen appreciably. Moreover, in September, the finance ministers of the so-called Group of Five (United States, Britain, Germany, France, and Japan) agreed that the dollar was valued too highly on world markets. Prior to the September meeting, the dollar had fallen 12 percent from its February peak. Since then, the dollar has fallen yet another 8 percent. These declines have recently offered the hope that the trade deficit would turn around quickly. Economic research indicates, however, that the average lag between changes in relative export prices and shifts in trade performance is 18 months. That is, even if there were a significant shift in the value of the dollar, it would still be a year and a half before the U.S. balance of trade is materially affected. Accordingly, no significant improvement in the trade deficit is forecast for 1987. The current account trade deficit for 1987 should be $118 billion. Beyond 1987 the trade deficit should decline as the combination of a softer dollar and reduced real interest rates begin to take their toll.

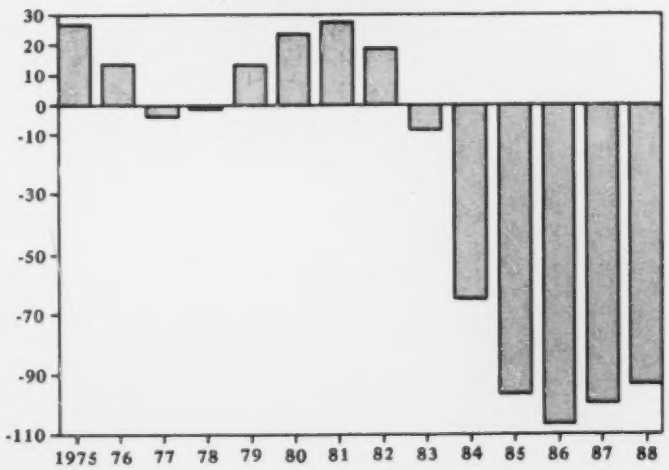
Agriculture

Continuing financial stress is the most likely outlook for the production agriculture sector in 1986. Recent USDA forecasts (December 1985) are for a 22 percent drop in net farm income between 1985 and 1986 – from $34.5 billion down to about $27 billion. Also, there has been a sharp erosion of farm asset values, especially in the case of farm land, whose values have fallen 18 percent since 1982. Between 1980 and the end of 1984, equities in production agriculture were reduced by $180 billion, drastically affecting credit reserves for financially pressed farm operators.

Relative price movements for production agriculture have not been favorable. The August 1984 Index of Prices Received by Farmers (includes all farm products) was 143 (1977=100). In November 1985, it was 126, a 12 percent fall. Over the same period, the Index of Prices Paid by Farmers for Commodities and Services, Interest, Taxes, and Farm Wage Rates fell only one point (0.6 percent decrease), from 164 to 163 percent. The ratio between the two indexes (Prices Received divided by Prices Paid) dropped from 0.87 to 0.77 over the 15-month period.

FIGURE 3

U.S. NET EXPORTS, 1975-1988
(Billions of Nominal Dollars)



Short-term U.S. Outlook

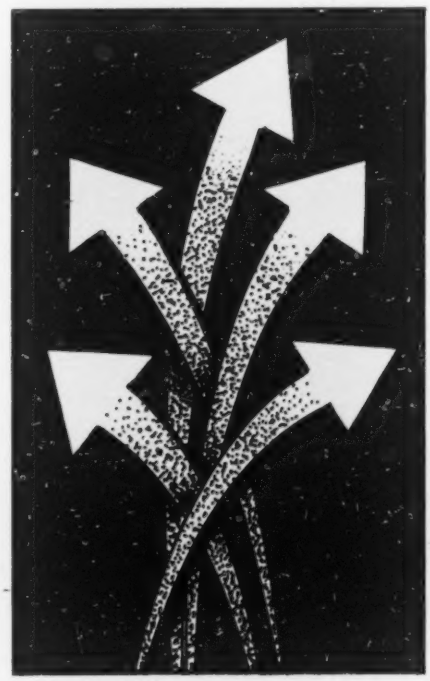
On the domestic supply side, nearly optimal climatic conditions in 1985 resulted in record yields of commodities such as corn, sorghum, oats, and soybeans. Corn yields per acre are expected to average 115.1 bushels, an increase of 8 percent over last year. Harvested acreage also increased 4.2 percent, resulting in a total supply increase of 18 percent. Sorghum yields and harvested acreage increased enough to raise production 30 percent over the previous year. Corresponding increases for supplies of oats and soybeans are 14 and 30 percent, respectively. In addition, domestic cotton production increased almost 5 percent.

In respect to major livestock products, little change is expected in levels of beef or pork production in 1986. Increases are expected, however, in supplies of poultry in response to favorable feed/product price relations for growers. Also, an increase is expected in milk production in 1986, even after a 5.8 percent rise in 1985.

The 1985 burley tobacco crop is forecast to be 15 percent less than last year's. But because of a large 1984 crop, stocks on hand September 30, 1985 were expected to be 9 percent above those at the same time in 1984. The net result will be a slight increase in supply during the coming marketing year, which will more than suffice to meet industry needs.

There is little on the domestic demand side to cheer the outlook for farm level prices and incomes, even with the economic recovery currently under way. The reason is the well-known low price and income elasticities of demand for most farm products. The low price elasticities (in absolute terms) translate into highly price-flexible farm level demands. That is, small increases in quantities needing to be sold on domestic markets (for example, because of "bumper" crops or because of a drop in export sales) will cause percentage price decreases that are substantial multiples of increases in amounts available for sale for domestic uses. Further, increases in per capita consumer incomes will do little to increase the aggregate farm level demand for food and fiber products. Instead, increases in income go toward higher valued products with more attached marketing services, rather than an increase in aggregate farm output demand.

The outlook for 1986 is clouded further by developments in world markets for farm products. On the supply side are the generally abundant world market supplies that have been available during 1985 and are expected again in 1986. For example, harvests of feed grains, food grains, and cotton in the United States and the USSR have been particularly good. Some of the increases in farm commodity production occurred in nations that were formerly net importers. Hence, a decline expected in international trade in these commodities will impact on United States agricultural trade. Agricultural exports, which dropped from +$37 billion in 1983-84 to $31 billion in 1984-85, are expected to fall further in 1985-86.



The Long-term U.S. Outlook

The longer-term outlook involves two sets of considerations, the first of which is concerned with the unpleasant cliche of "going through the wringer." The second concern involves what, if anything, can be done to revive the farm export trade that was the key factor in the farm prosperity of the 1970s.

"Going through the wringer" is not a new experience for the American agribusiness economy. The fundamental difficulties of excess production capacity, fluctuating export demands, staggering farm indebtedness, and ripple effects on farm input, financial, and marketing industries have been with us since the early 1920s. During World War I, World War II, and the 1970s, American farmers responded to spurts in demand by adding to their productive capacity – planting more acres, operating more intensively, and using improved technology. As long as the unusual demand conditions lasted, farmers fared well. Farm prices moved up farther and faster than did nonfarm prices. Farm incomes increased as well. Being optimists and enjoying their prosperity, farmers expanded their operations, mainly with borrowed funds. But when the spurts in demand ended and prices fell, farmers were left with excess production capacity and crushing farm mortgage debts. In the economy of production agriculture there is a unique phenomenon – the so-called "irreversible" long-run supply curve for aggregate farm output. That is, the aggregate supply function is relatively less elastic when farm prices are decreasing than when prices are increasing. Once additional resources (including improved technologies) are allocated to increase total output, it is extremely difficult to withdraw them.

Over the entire period from World War I to the present, the major "swing factor" (the one that made the difference between good times and bad times for American farmers) has been the fluctuations in export demands. Once sales to our World War I allies ceased and the U.S. reverted to a high tariff policy, farm export markets shrank. The terms of trade between farm and nonfarm products turned against agriculture during the 1920s and stayed that way during the depression years of the 1930s. New Deal programs, initiated to cope with farm economic problems, accomplished little in terms of the fundamental problem of excess capacity.

The "Ever-Normal Granary" approach of the 1938 Agricultural Adjustment Act, in implementation became an "Ever-Abnormal Granary." It took the Lend-Lease shipments during World War II and the Marshall Plan programs of the late 1940s to absorb the excess capacity. American involvement in the Korean conflict also augmented domestic demand for a time. But once the armistice was signed in July 1953, the "surplus" problems returned.

These problems persisted until the 1970s, when an unusual set of conditions juxtaposed to cause unusual growth in American farm export markets: there was vigorous economic growth in importing nations; credit for financing imports abounded; nations with centrally planned economies emerged as important buyers of American grains; Third World nations, sharing in the strong economic growth and access to credit, were able to finance increased food imports. Finally, the U.S. dollar was relatively undervalued in terms of foreign currencies.

The result was that American farm exports went from $7 billion in 1970 to $14 billion in 1973 to $41 billion in 1980. Large grain sales were made to the USSR and Mainland China, and Third World nations bought almost 50 percent of all U.S. agricultural exports. Domestic prices were good, farming was profitable, and another farm land price boom ignited. Then, suddenly, it was over. A worldwide economic recession took hold in 1981. Third World nations, particularly hard hit, had to retrench on their food imports. Increased price competition has resulted as other exporting nations have increased their own farm output capacities and are displacing American products in overseas markets. Trade restrictions and/or subsidies by nations such as Japan and those in the European Economic Community have also dampened U.S. farm exports. Finally, sharply appreciating exchange rates for the U.S. dollar have served to raise export prices of American products to even more noncompetitive levels.

Farm export demand. One of the most important results of the current difficulties is the comprehension that the U.S. agribusiness economy is (and has been for decades) an interdependent part of the world food/fiber economy. The severity of current farm problems in terms of farm foreclosures, bank failures in rural areas, and hardships of farm input manufacturers and merchants have finally brought home this understanding. The oft-repeated fact is that one-third of the nation's farm acreage is applied to producing for export markets. If these markets go sour, as they have in the past few years, then agribusiness economy "goes through the wringer" again.

The ultimate key to revival of the farm export demand rests beyond the production agriculture sector. The starting point is American fiscal and monetary policies and their effects on both domestic and overseas interest rates and on exchange rates for U.S. dollars. Specifically, federal budget deficits must be reduced enough to lower real interest rates at home and induce lower interest rates abroad. Reduced domestic interest rates would help reduce farm production costs and make these products more price-competitive on world markets. To the extent that reduced federal budget deficits help reduce U.S. dollar exchange rates, this also would make American exports more price-competitive. Finally, reduced interest rates abroad would restimulate economic growth, especially in Third World nations that were forced to curtail food imports in the wake of the 1981-82 recession.

Summary

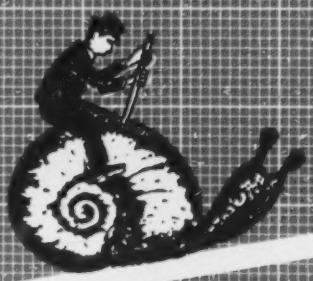
There are ample signs for an optimist to believe that solid economic growth will reemerge in the fourth quarter of 1985 and continue throughout 1986. The Fed seems committed to keeping the recovery going through an accommodating monetary policy. This strategy appeared to stimulate the economy in the spring of 1985 when the economy appeared to falter. It may continue to work.

On the other hand, by examining the various components of the GNP identity (GNP = Consumption + Investment + Government + Net International Trade), it is difficult to see any non-monetary source of continued expansion. Slower consumer spending growth, fueled by historically unprecedented consumer debt and a very low savings rate, will not provide the stimulus it did in 1983-85. Investment growth will be moderate, but still down significantly from the vibrant growth in 1984. The stimulative effect of federal budget deficits will decline. And, our net international trade picture remains bleak for some time.

The most likely scenario is that continued accommodative monetary policy will be able to sustain modest but below-trend growth for 1986 and the possibility of better growth in 1987. The possibility that the economy will not respond to such a lax monetary policy, or that monetary policy will tighten somewhat with a commensurate slowdown in late 1986, cannot be ruled out. ■

Ed. Note. This article has been condensed from the 1986 **Economic Report to the Governor on the State of Our State**, *prepared by the Center for Business and Economic Research for the Tennessee State Planning Office.*

Though both a recession and an expansion have occurred, the economy (as measured by employment) has expanded across the business cycle since 1979 without any net increase in the government, construction, or manufacturing.



The Tennessee Outlook: Another Year of Expansion

William F. Fox
Leroy T. Hansen

Traditionally, economic conditions in the U.S. substantially dictate the short-run performance of the Tennessee economy. Current national conditions appear to indicate relatively slow growth for the next year, principally because of weakness in the international sector, shrinking national deficits relative to GNP, and slowing consumer spending.

Disparities in the economic structures of states elicit varying responses to a particular national economic climate. Such dissimilar reactions make imperative a separate consideration of how the short-term environment will affect Tennessee.

Recent Economic History

Although the current economic expansion started nationally in November, 1982, some signs indicate that the Tennessee expansion did not begin until about six months later, although slow increases in employment were evident in early 1983. The state unemployment rate reached a peak of 13.0 percent during 1982.4, which is an all-time high for recorded rates in Tennessee. Since that time the rate has generally dipped, reaching a low of 7.9 percent during 1985.2. Although the rate has risen slightly over the last several months (until October), it has been the result of growth in the labor force rather than a declining economy, so this rise should not be viewed as evidence of a worsening economy.

By the beginning of 1985, the expansion seemed to have lost steam. Nonagricultural jobs in the state stayed basically flat between January and June 1985, as manufacturing declined and nonmanufacturing grew just enough to offset these declines. More recent data seem to evidence a resurgence, however: employment grew over 20,000 between June and August, 1985, and the unemployment rate dropped in October as another 10,500 jobs were added. Also, sales growth, which had appeared to slow, has been much better during the last several months.

Sectoral Performance Across the Expansion

The expansion was very strong for the first 18 months, as evidenced by the 5.0 percent growth rate in nonagricultural jobs which occurred in 1984. In some ways the expansion has been traditional, as those sectors of the economy which normally perform well in an expansion were growing rapidly. For example, durable goods manufacturing – led by fabricated metals, transportation equipment, nonelectrical machinery, and furniture and fixtures – was the fastest growing sector at the beginning of the expansion (see Figure 1). By the end of 1984 durable goods manufacturing had nearly reached the peak which was established in 1979. Even though construction employment also grew very rapidly during 1984, at the end of the year that sector's employment level was nearly 15,000 below its 1979 peak (see Figure 1).

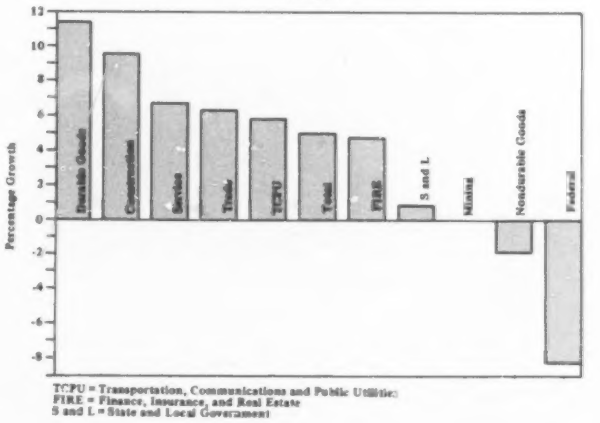
The services, trade, and transportation, communications, and public utilities (TCPU) sectors illustrated particularly strong growth during the early part of the expansion. In fact, services was one of the few industries which continued to grow throughout the recession and has been an important source of growth for some years. TCPU employment tends to grow rapidly in an expansion, when transportation and other business-related activities are in much demand; however, this sector performs more poorly during a recession.

In the trade sector, which includes wholesale and retail trade, employment declined during the recession, but the growth has been substantial since the beginning of Tennessee's expansion in early 1983. Trade is expected to experience the most rapid employment growth of any sector during 1985: the strength of retail sales is an important reason. In 1984 retail sales grew 9.9 percent above the inflation rate, or 13.4 percent, including inflation. Sales slowed in the first quarter of 1985, but resurged to grow 10.0 percent (including inflation) in the second quarter. Sales were strong again in the third quarter as a result of the special interest rate breaks offered by auto manufacturers.

The uncharacteristic response of some industries during the expansion has resulted in Tennessee's showing growth similar to, rather than stronger than, the U.S. Nondurable manufacturing is one grouping that has failed to show any rebound from the recession, as employment in this sector has declined every year since 1981. Chemicals, leather, and food products have shown the largest declines over the past several years. Textile and apparel nonmanufacturing have also declined significantly. Historical experience would indicate that a strong rebound would have been expected in the nondurable industries in an expansion. It is important to note that employment declines in some industries, such as chemicals, are more the result of efforts to achieve efficient production methods through modernization, rather than evidence of declining output in the industry. In other industries, however, the decline

FIGURE 1

NONAGRICULTURAL JOB GROWTH RATES
1983-84



TCPU = Transportation, Communications and Public Utilities
FIRE = Finance, Insurance, and Real Estate
S and L = State and Local Government

FIGURE 2

TENNESSEE AND U.S. UNEMPLOYMENT RATES

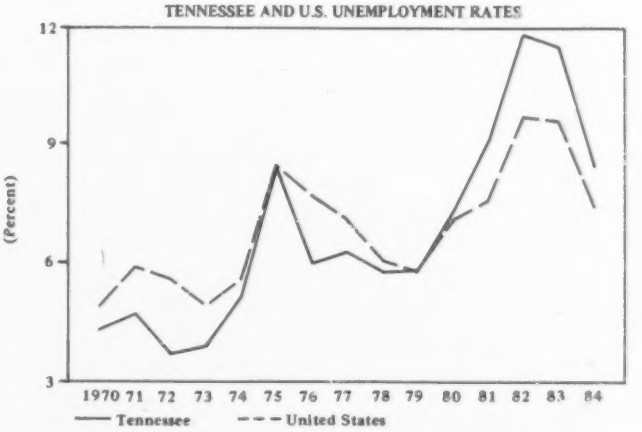
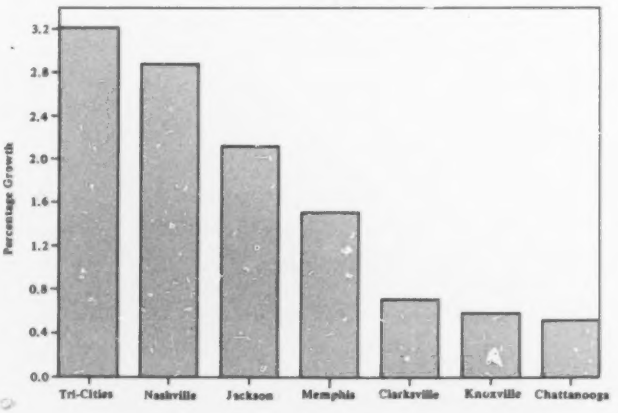


FIGURE 3

MSA EMPLOYMENT GROWTH RATES
1979-1984



For the 1979-to-1984 time period, employment growth in metropolitan areas has been most rapid in the Tri-Cities area and slowest in the Chattanooga area.

represents the withdrawal of firms from Tennessee or the reorganization and shrinkage of firms with resulting employment cuts.

Government is another sector which has demonstrated uncharacteristic performance during the expansion. Federal government employment declined in both 1983 and 1984 in the face of TVA cutbacks and the lack of increases in U.S. domestic programs. State and local government employment did show some growth, but at very low rates, and August 1985 was the first month that state and local employment reached the levels of early 1980. Thus, government has been an overall net drag on the Tennessee economy during the first several years of expansion. What was a strong growth industry during the 1970s became a retardant to economic growth for the state.

In total, though both a recession and an expansion have occurred: the economy (as measured by employment) has expanded across the business cycle since 1979 without any net increase in the government, construction, or manufacturing. Thus, the net growth is coming solely from non-goods-producing industries. The challenge for Tennessee has been in trying to achieve good growth overall while experiencing structural decline in several sectors. Structural decline, at least in a relative sense, will continue for several more years in these industries, but prospects for growth are very good once these structural declines are finished.

Unemployment Rate Patterns

Unemployment rates are now much higher than they have been historically in Tennessee. There has been a substantial increase in rates across business cycles since Tennessee went through the 1975 recession and the ensuing economic expansion.

The same scenario has occurred in the nation, where unemployment rates are much higher than in earlier years. But the upward trend in rates has not been as strong across the U.S. as it has been in Tennessee. In Figure 2 it can be seen that unemployment rates were generally lower in Tennessee than the entire U.S. during the 1970s, but have been higher during the 1980s.

A recent study conducted by CBER for the Department of Employment Security determined that the "natural unemployment rate" has risen from 4.6 percent in 1961 to 7.6 percent in 1983. This is the reason for the pattern of higher unemployment rates. The natural unemployment rate is the unemployment rate which remains when everyone who wants a job at the going wage rate has one. This type of unemployment always exists as people search for first jobs, as they quit one job to find another, or as they take no job because they are unable to find a position offering the wage rate they believe is necessary. Nationally the natural rate has been rising, particularly because of more young people and women in the labor force. These new entrants have weaker ties to the labor force, and as a result, change jobs more frequently.

Tennessee's natural unemployment rate has also grown because of new labor force entrants, but this growth fails to explain why Tennessee's rate has grown so much more rapidly than that of the U.S. Several factors, such as rises in Tennessee's wage rates and improvements in the unemployment compensation system, are reasons why Tennessee's natural rate has risen more rapidly than that for the U.S. Perhaps the most important reason is the increases in structural unemployment here. Structural unemployment occurs when there are reductions in the demand for labor in a place. In Tennessee this has happened as certain employers have left the area, particularly to cease production in the U.S. and to resume production overseas. The workers who have lost their positions are often unable to find jobs near their homes that pay salaries equal to those they formerly earned. Thus, they remain unemployed for a long time period because they feel they cannot find a job at a salary that pays them what they are worth.

Geographic Distribution of Economic Growth

Because of the recession during the early part of the 1980s, growth has not been continuous over the past five years. Similarly, growth has not been equal across the state. The data illustrated in Figure 3, for the 1979-to-1984 time period, show that among the metropolitan areas, employment growth has been most rapid in the Tri-Cities area and slowest in the Chattanooga area.

The diversity in economic performance defies an easy explanation. The two slowest growing and the fastest growing places are in East Tennessee. Furthermore, Nashville, which has grown very fast, and Clarksville, which has grown more slowly than average, are in Middle Tennessee. The two West Tennessee MSAs, Jackson and Memphis, have grown at a rate closer to the state's average.

Some reasons for the trends in various cities can be determined from careful study of those areas. For example, although Knoxville has had good growth in service and trade-related industries, the historical strength in nondurable manufacturing industries is being eroded. Also, cutbacks in TVA and lack of expansion in federal domestic programs, which have hindered the Oak Ridge-related activities, have been economic drags on the area. The expansion in the service and trade sectors has not been strong enough to offset the declines and still yield a rapid growth in the overall economy.

Forecasting in the Current Economic Environment

These appear to be particularly difficult times to forecast. The question that arises is this: will the national economy continue the lethargic growth

that has occurred over the past six to twelve months, or will it return to the rapid growth pattern of mid-1983 to mid-1984? As described in the previous chapter, there are many question marks in the issue of the national economy. The basic issue is whether monetary policy and consumers' relentless desires to spend (though declining as a share of GNP) can overcome a large government deficit, a large international trade deficit, and the historical average for the length of an expansion. The average expansion during the post-war period is 45 months, and this will be reached in August 1986.

Within Tennessee the issue is how the state's economy will respond to the economic pattern which occurs nationally. The historical relationship has been for the Tennessee economy to be more cyclical than the U.S., meaning that the state generally grows more rapidly in expansions and more slowly in recessions (see Figure 4). The years 1983 through 1985 have failed to demonstrate the type of strong procyclical pattern which occurred in the 1970s. Whether this is establishing a new relationship with the national economy remains to be seen, but the effects of the structural changes in nondurable manufacturing and the TVA reductions are probably unique and should not be regarded as a trend.

A similar issue is that, although Tennessee has been more cyclical than the nation, it has grown on average more rapidly than the nation (see Table 1). The period from 1980 to 1985 has run counter to this trend, but the length and severity of the recession at the beginning of the period may be the most important reason. The point here is the same: has a new relationship been established between the state and the U.S.?

FIGURE 4

TENNESSEE GSP AND U.S. GNP GROWTH RATES

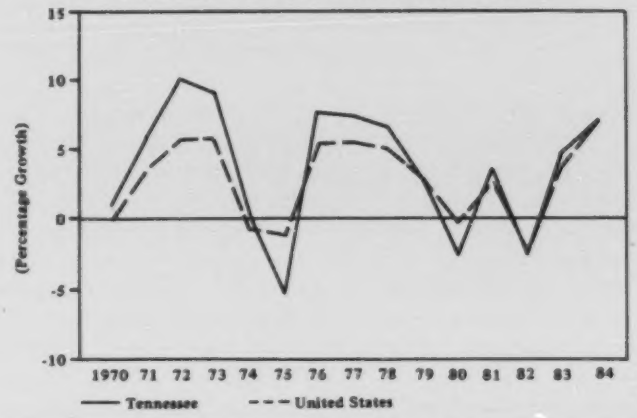


TABLE 1

TENNESSEE AND UNITED STATES NONAGRICULTURAL JOBS COMPOUND ANNUAL GROWTH RATES 1960-1970, 1970-1980, AND 1980-1985

	Tennessee	United States
1960-1970	3.68	2.73
1970-1980	2.78	2.47
1980-1985	1.26	1.53

A final issue pertains to the slowdown in employment growth rates, a trend which is evident from Table 1. Both the U.S. and Tennessee have been reporting much lower employment growth in each successive time period, mostly as a result of changing population demographics. Eventhough the employment growth rates will not return to the experiences of the 1960s, the issue to be dealt with is what will happen to output growth as the work force matures and stabilizes somewhat.

Over the longer term a number of factors illustrate the potential for strength in the Tennessee economy. The Nissan plant location, combined with the decision of GM-Saturn to locate its plant in Spring Hill, means that Tennessee has attracted two of the most visible plant locations in recent history. A recent study by CBER, **Business Location Determinants in Tennessee**, shows that labor-force-related factors are the most important determinants of why firms have chosen this state. The pro-business attitude of the state was also very high on the list of location factors. Since these labor-force characteristics remain in place, the strong growth pattern can be expected to reemerge.

Short-term Economic Scenario

The current view of the Tennessee economy is that the expansion will continue for the next two years (see Table 2). However, although no recession is forecast, the economy is expected to remain in a slow growth posture for the next two years and to reach a point in mid- to late-1986 where there is little employment growth occurring in the state.

After increasing at a 6.6 percent rate in 1984, real personal income is forecast to grow 3.9 percent in 1985. Personal income growth is expected to slow in 1986, as it will be only 2.4 percent higher in 1987.1 than in 1986.1. Slowing growth in wages and salaries will be the source for most of the slowdown.

Employment

Growth in nonagricultural jobs is expected to be 1.9 percent in 1986, but the pattern will likely be one of falling growth rates across the year. The most vibrant growth rates will remain in the nonmanufacturing sectors, led by finance, insurance, and real estate (FIRE), services, and trade (see Figure 5). These industries have been the sources of longer-term employment growth in the state and are expected to remain that way in 1986. Expansion in the business service

and health care areas will probably show the strongest growth in the services sector. Trade employment, responding to the rapid increases in consumer spending, has expanded very rapidly. Some slowdown in consumer spending is anticipated, and with it will come a slowdown in trade growth. The forecast for 1986 is based on a slowdown, but not a collapse in consumer spending.

Manufacturing employment is forecast to continue declining in 1986 but at a much slower pace than in 1985. In total, the durable goods industries are expected to have about the same employment in 1985 and 1986, although some differences in growth patterns will likely occur by industry as instruments and primary metals will grow and furniture and fixtures and stone, clay, and glass will likely decline.

The manufacturing decline will be concentrated in the nondurable industries as textiles, apparel, and leather goods will be the hardest hit. On the other hand, some nondurable industries, such as printing and publishing and paper, are forecast to exhibit moderate growth.

Several additional points should be made about the manufacturing industries. First, though employment in the aggregate of these industries fell in 1985 and is forecast to fall in 1986, output has been growing. Capital investment and increased hours worked in these industries has allowed the production of Tennessee's factories to rise despite the employment trends. Second, some manufacturing industries have grown; it is the aggregate which has declined. Finally, as the economy reaccelerates in 1987, manufacturing employment is expected to grow somewhat. Much larger declines in the value of the dollar could also spur some manufacturing expansion in Tennessee and the rest of the U.S.

Although it appears that government employment is forecast to increase at a rapid rate in 1986, this illusion is actually the result of very strong increases in state and local government employment in 1985.2 and 1985.3. State and local government employment in 1986 will be just above the previous peak which was reached in 1979. Federal government employment will be well

TABLE 2
QUARTERLY TENNESSEE ECONOMETRIC MODEL
OCTOBER 15, 1985 QUARTERLY UPDATE

SELECTED U.S. AND TENNESSEE ECONOMIC INDICATORS (SEASONALLY ADJUSTED)

	LAGGED	FORECAST-DATA										ANNUAL		
	1985.1	1985.2	1985.3	1985.4	1986.1	1986.2	1986.3	1986.4	1987.1	1987.2	1987.3	1984	1985	1986
US GNP (BIL 72 $).....	1663.5	1671.6	1683.6	1700.1	1709.8	1718.7	1729.7	1744.2	1761.5	1777.4	1790.2	1639.3	1679.7	1725.6
% CHG PREV QTR SAAR.....	0.26	1.96	2.90	3.98	2.30	2.10	2.58	3.40	4.03	3.66	2.91	6.82	2.46	2.73
% CHG SAME QTR LAST YR.....	3.27	2.00	2.33	2.27	2.78	2.82	2.74	2.59	3.02	3.42	3.50	6.82	2.46	2.73
US PERS CON DEFL (1972=100).....	224.6	226.4	228.1	230.0	231.9	234.2	236.6	239.0	241.4	243.9	246.6	220.4	227.3	235.4
% CHG PREV QTR SAAR.....	3.27	3.24	3.04	3.37	3.35	4.03	4.16	4.12	4.08	4.21	4.50	3.18	3.13	3.59
% CHG SAME QTR LAST YR.....	3.03	3.28	2.98	3.23	3.25	3.45	3.73	3.91	4.10	4.14	4.23	3.18	3.13	3.59
TN PERSONAL INCOME (MIL $).....	51100.	52344.	52994.	53825.	54992.	55851.	56728.	57448.	58595.	59655.	60827.	49048.	52566.	56255.
% CHG PREV QTR SAAR.....	5.27	10.10	5.06	6.42	8.96	6.40	6.43	5.17	8.22	7.44	8.09	10.02	7.17	7.02
% CHG SAME QTR LAST YR.....	7.73	7.68	6.63	6.69	7.62	6.70	7.05	6.73	6.55	6.81	7.22	10.02	7.17	7.02
TN PERSONAL INCOME (MIL 72 $)...	22752.	23120.	23233.	23402.	23713.	23848.	23976.	24037.	24273.	24459.	24666.	22254.	23127.	23894.
% CHG PREV QTR SAAR.....	1.94	6.64	1.96	2.95	5.43	2.28	2.18	1.01	3.98	3.10	3.43	6.63	3.92	3.32
% CHG SAME QTR LAST YR.....	4.57	4.25	3.55	3.35	4.23	3.15	3.20	2.71	2.36	2.56	2.88	6.63	3.92	3.32
US PERSONAL INCOME (BIL 72 $)...	1399.7	1402.6	1414.6	1427.9	1443.3	1452.1	1459.5	1470.5	1485.3	1496.6	1506.3	1366.7	1411.2	1456.3
% CHG PREV QTR SAAR.....	2.93	0.82	3.46	3.81	4.40	2.44	2.06	3.07	4.07	3.07	2.63	6.38	3.26	3.20
% CHG SAME QTR LAST YR.....	4.48	3.01	2.82	2.75	3.12	3.53	3.17	2.99	2.91	3.07	3.21	6.38	3.26	3.20
TN NONAGRIC JOBS (THOUS).....	1845.7	1847.9	1869.2	1876.9	1889.1	1896.3	1897.4	1898.4	1901.4	1907.8	1928.6	1808.8	1859.9	1895.3
% CHG PREV QTR SAAR.....	3.47	0.49	4.69	1.66	2.63	1.52	0.25	0.21	0.62	1.35	4.44	5.01	2.83	1.90
% CHG SAME QTR LAST YR.....	3.38	2.42	2.95	2.56	2.35	2.62	1.51	1.15	0.65	0.61	1.64	5.01	2.83	1.90
US NONAGRIC JOBS (MIL).....	96.6	97.3	97.9	98.5	98.7	99.0	99.2	99.5	100.0	100.4	100.9	94.4	97.6	99.1
% CHG PREV QTR SAAR.....	3.38	2.93	2.49	2.47	0.81	1.22	0.81	1.21	2.03	1.61	2.01	4.71	3.34	1.56
% CHG SAME QTR LAST YR.....	3.87	3.51	3.16	2.82	2.17	1.75	1.33	1.02	1.32	1.41	1.71	4.71	3.34	1.56
TN UNEMPLOYMENT RATE (%).....	8.2	7.9	8.4	8.1	7.9	7.7	8.1	8.3	8.2	8.1	8.0	8.5	8.2	8.0
US UNEMPLOYMENT RATE (%).....	7.3	7.3	7.2	7.2	7.3	7.4	7.4	7.5	7.4	7.2	7.2	7.5	7.3	7.4
TN MFG JOBS (THOUS).....	496.9	488.7	483.0	484.6	484.6	483.9	484.4	485.5	487.3	488.5	491.5	497.5	488.3	484.6
% CHG PREV QTR SAAR.....	-0.49	-6.38	-4.60	1.34	-0.02	-0.60	0.42	0.92	1.48	0.99	2.04	5.33	-1.85	-0.76
% CHG SAME QTR LAST YR.....	0.77	-2.30	-3.26	-2.58	-2.47	-0.99	0.28	0.18	0.55	0.95	1.36	5.33	-1.85	-0.76
US MFG JOBS (MIL).....	19.6	19.4	20.1	20.4	20.6	20.8	20.9	21.0	21.1	21.3	21.4	19.4	19.9	20.9
% CHG PREV QTR SAAR.....	0.20	-2.83	13.84	7.16	4.38	3.93	1.93	1.73	2.30	2.67	2.66	5.32	2.37	4.98
% CHG SAME QTR LAST YR.....	2.03	0.15	2.87	4.40	5.47	7.26	4.33	2.99	2.47	2.16	2.34	5.32	2.37	4.98
TN MFG AVE WEEKLY HOURS.....	40.6	40.9	40.8	41.0	40.8	40.7	40.6	40.5	40.6	40.6	40.5	40.9	40.8	40.7
% CHG PREV QTR SAAR.....	-1.93	3.18	-1.50	2.16	-1.72	-1.38	-0.39	-0.97	0.51	-0.07	-0.50	0.93	-0.10	-0.40
% CHG SAME QTR LAST YR.....	-0.93	-0.12	0.20	0.45	0.51	-0.62	-0.34	-1.12	-0.56	-0.23	-0.26	0.93	-0.10	-0.40
US MFG AVE WEEKLY HOURS.....	40.4	40.3	40.8	41.0	40.9	40.7	40.6	40.4	40.4	40.4	40.3	40.7	40.6	40.6
% CHG PREV QTR SAAR.....	-1.57	-0.40	4.85	1.97	-1.17	-1.85	-1.47	-1.08	-0.49	-0.20	-0.40	1.40	-0.11	0.04
% CHG SAME QTR LAST YR.....	-1.22	-1.08	0.69	1.18	1.29	0.92	-0.64	-1.39	-1.22	-0.81	-0.54	1.40	-0.11	0.04

SOURCE: QUARTERLY TENNESSEE ECONOMETRIC MODEL, CENTER FOR BUSINESS AND ECONOMIC RESEARCH, UT-KNOXVILLE.

below its earlier peaks, owing to cutbacks at TVA. Further congressional cuts in the TVA budget could lead to lower federal government employment levels and would cause correspondingly lower employment in the state.

The unemployment rate is projected to reach 7.7 percent by 1986.2, but to subsequently increase for several quarters because the labor force will expand faster than employment. The expected low point in the unemployment rate is very near Tennessee's natural unemployment rate estimate for 1983. The rate should begin falling again in 1987 and can be expected to be much lower in the 1990s.

Personal Income

Personal income is forecast to increase about 7.2 percent in 1985. This is 1.5 percent lower than was forecast in last year's economic outlook. The reason for the projected decrease was a combination of lower inflation and a slightly weaker economy than was anticipated. The forecast for real growth in personal income for 1985 was 4.3 percent in last year's ERG, and it appears that the actual result was 3.9 percent.

Personal income growth is expected to rise by 7.0 percent in 1986, only slightly slower than the current year. In real terms, income in 1986 is forecast to grow 3.3 percent (0.6 percent lower than 1985) and the inflation rate is expected to be slightly higher than last year, at 3.6 percent. The considerable slackening of wage and salary growth will be much of the reason for the slowdown in personal income growth.

Sales

Sales growth in Tennessee is evidence of the role consumers have played in the current expansion. Sales were 13.3 percent higher in 1984 than in the previous year. Some slowdown in sales growth occurred in 1985, but the forecast is for sales to be 7.2 percent higher than in 1984. In both 1984 and 1985 sales growth was significant in inflation-adjusted terms. As is usually the case with an economic expansion, much of the sales growth has been in durable goods categories. Automobile dealers, miscellaneous durable goods (which includes sales for items such as furniture and appliances), and purchases directly from manufacturers have experienced the most rapid growth in sales, whereas sales for food and liquor stores have experienced the smallest gains.

The forecast is for 1986 sales to be 6.1 percent higher than 1985. In inflation-adjusted terms, this means a 2.4 percent increase. Growth rates for sales of durable goods and sales in other categories will be closer than the recent experience. Convergence of the growth rates normally happens at this point of a business cycle because durable sales growth slows and sales growth for other goods increases (at least in relative terms).

LONG-RUN TRENDS

In the long run, the Tennessee economy will maintain a growth pattern similar to, but stronger than, that of the nation. Lack of union influence in the state, right-to-work laws, pro-business attitude of state government, higher average worker productivity, and access to markets are major factors which contribute to this ability to maintain a slightly higher long-run growth. Over the forecast horizon, most sectors of the state's economy will maintain a relative output share of the state's economy similar to last year's, with only agriculture continuing with a significant decline.

Employment and Output

Long-run average annual compound growth rates in employment and output from peak years in the business cycle and for the forecast period are illustrated in Table 3. In general, Tennessee's employment growth rate has exceeded that of the U.S., and this trend is forecast to continue. Table 3 indicates that Tennessee has also maintained a higher growth rate in output than the rest of the nation.

Another interesting feature of the past growth patterns is that growth rates in employment and output are falling in both the nation and the state. There are several reasons for the decline: the ending of the Vietnam War, which lessened demand stimulus; the ending of the baby boom population entering the labor force, which lessened labor-force growth rates; the high real interest rates, as government borrowing crowds out private capital investment; and finally, shifts in the economy which were precipitated by the oil price changes in the 1970s.

Past growth patterns of the various industries within the state show considerable variation across business cycles in both employment and output growth rates for most sectors. Since the total GSP growth rate has also varied across the business cycles, the sector's trend must be compared to that of GSP. Subtracting the compound average annual growth rate of GSP from that of a specific sector will show how much faster (or slower) that sector grew (or is estimated to grow) relative to GSP. Such estimates were made for selected sectors for each of the time periods listed in Table 3. In Figure 5 a series of bar graphs indicates how different a sector's output growth rate is from GSP's growth rate over each time period. Table 3 reports GSP growth rates. Positive numbers indicate to what level the sector's average annual compound growth rate exceeds that of GSP, while negative numbers imply that the sector's average annual compound growth rate fell short of GSP's for that time period.

The same methodology is used to show whether employment growth rates for various sectors are larger or smaller than those of the state. These values are represented by the bar charts in Figure 6. Total employment growth rates are shown in Table 3.

Sectors of the state's economy which show negative differences from the state's growth rates must be declining in relative importance to the state's economy. Mining and construction consistently have shown growth rates less than those of the state, and thus, they now produce a smaller share of the state's output than they did in 1960. The competition in mining from western states (where large economies of scale decrease their output costs) has also led to less than the state's average in mining employment growth.

Nondurable goods output has recently shown an output growth rate that is less than that of the state's. This decline is due in part to an overvalued dollar, but it continues a trend where some nondurables are being produced more cheaply overseas. Employment growth for the nondurable goods sector has been consistently less than that for the state because the industry has increased technology and capital use in the production process to add output without having had to add employment. It should also be noted that some of the slow growth is deceptive because a significant firm was reclassified out of the nondurable goods sector.

Positive sectors in relative output growth rates are durable goods manufacturing and services. That durable goods manufacturing shows a fall in relative employment, despite the output increases indicates that the durable goods industry has been becoming more efficient and expanding output, with proportionately less labor. Services' relative employment has been gaining faster than any other sector as the economy has become more service-oriented.

TABLE 3

AVERAGE ANNUAL COMPOUND GROWTH RATES ESTIMATED OVER PAST BUSINESS CYCLES AND OVER FUTURE TRENDS (In Percent)

	1960-1969	1969-1973	1973-1979	1979-1985	1985-1994
U.S.					
Output (GNP)	4.4	3.6	2.8	2.1	2.8
Employment (Nonag.)	3.0	2.2	2.6	1.4	1.4
Total					
Output (GSP)	5.9	6.4	3.1	1.9	3.1
Employment (Nonag.)	3.9	4.0	2.5	0.8	1.7
Mining					
Output (GSP)	4.3	5.6	0.9	-4.2	-0.0
Employment	-0.8	0.1	6.9	-5.4	-0.3
Construction					
Output (GSP)	3.5	4.2	-0.8	-1.9	2.8
Employment	4.0	5.7	0.6	-2.5	0.7
Manufacturing (total)					
Output (GSP)	8.9	8.3	2.6	2.0	3.4
Employment	4.5	2.6	0.2	-1.2	0.7
Trade					
Output (GSP)	5.0	6.8	3.2	3.2	2.8
Employment	3.1	5.3	3.7	2.4	2.2
Services					
Output (GSP)	4.3	5.6	3.8	4.0	3.0
Employment	4.3	6.0	4.3	4.0	2.8
FIRE					
Output (GSP)	4.9	5.8	3.9	2.1	2.9
Employment	3.9	4.6	2.7	2.4	2.1
TCPU					
Output (GSP)	5.9	6.8	5.6	1.9	4.0
Employment	2.0	2.3	3.2	0.7	1.7
Government (total)					
Output (GSP)	5.0	3.2	3.9	-1.1	2.3
Employment	4.3	3.6	4.1	-0.9	1.1
Federal					
Output (GSP)	3.2	1.2	5.0	-2.8	1.9
Employment	2.2	3.7	6.1	-3.3	0.5
State, Local					
Output (GSP)	6.5	4.5	3.1	-0.0	2.5
Employment	5.0	3.5	3.6	-0.2	1.3
Durable Goods					
Output (GSP)	10.1	8.0	2.7	3.6	4.1
Employment	6.1	4.2	0.7	-0.3	1.1
Nonelectrical Machinery					
Output (GSP)	11.8	18.4	4.4	5.8	4.8
Employment	8.1	15.1	1.8	-0.2	1.6
Electrical Machinery					
Output (GSP)	19.5	6.0	4.3	1.9	3.6
Employment	9.7	5.7	-0.3	-2.0	5.7
Transportation Equipment					
Output (GSP)	14.4	9.7	8.0	1.6	5.7
Employment	11.6	7.4	2.7	1.1	3.0
Nondurable Goods (total)					
Output (GSP)	8.0	8.6	2.4	0.8	2.8
Employment	3.5	1.4	-0.2	-2.0	0.4
Textiles					
Output (GSP)	7.1	5.5	-1.0	2.8	1.7
Employment	1.6	-2.3	-3.2	-2.5	-0.5

Source: Annual Tennessee Economic Model, Historical Data and December 1985 Control Solution.

The Long-run Forecast

The long-run analysis of economic growth has assumed no sudden shocks to the economy, though there is always potential for external economic effects. For example, the behavior of the Tennessee economy over the next eight years, like the U.S. economy, will be very dependent on action taken in the political arena. The deficit will be a significant challenge to control in recessionary times. In such conditions, budget-balancing efforts may be more damaging than helpful. Yet, failure to control the deficit will continue to put pressure on interest rates, thus inflating the international value of the dollar and continuing the artificial relative export/import prices. The crowding out of private investment may be the greatest problem associated with high real interest rates because it erodes the economy's long-term ability to produce. Another factor which could affect long-run economic behavior is activity in the world oil markets. Sudden change within an economy can be either damaging and lead to a recession, or be positive (overall) and spur economic growth. Deflated oil prices (which appear to be the trend) could have a very positive impact on the economy overall as production costs fall and consumer incomes rise.

The average annual compound growth rate from 1985 through 1994 of the Tennessee economy, as measured by real GSP, is projected to be a healthy 3.1 percent. This exceeds that of the U.S. economy by 0.3 percent (see Table 3) and results from the afore-

mentioned reasons, such as higher worker productivity, lack of labor unions, and access to markets.

The annual forecast indicates that because of structural shifts in the Tennessee economy (e.g., a dramatic slowdown in TVA activity and trend decline in the nondurable manufacturing industries), the state's projected annual growth will lag behind that of the U.S. until 1988, after which Tennessee will maintain the lead. A mild downturn in growth is expected in 1990; however, both the state and the national economies are expected to rebound vigorously in 1991, achieving growth rates of 5.8 and 5.4 percent, respectively.

Annual employment growth rates vary significantly across years for both Tennessee and the nation, but overall, the projected average annual compound growth rate in employment for Tennessee exceeds that of the nation. Projected average compound growth rates for both the U.S. and Tennessee fall short of the pre-1980 levels. This decline follows from demographic trends such as the end of the baby boom and a decrease in the number of women entering the labor force.

A striking difference in employment for the state and the nation is the persistently higher unemployment rates (much higher than pre-1980s levels) due, in part, to the entry of young people and women into the labor force. The unemployment rate for Tennessee is expected to continue to exceed that of the nation throughout 1994, varying from a high 8.2 percent in the recession year of 1990 to a low of 7.0 percent in 1994. Projected annual employment growth for Tennessee remains somewhere around the 1.5 to 2.0 percent range except for a dip to -0.11 percent in 1990.

Manufacturing produces approximately 38 percent of the state's total output. Though manufacturing output grew significantly faster than the state's average output throughout the 1960s and early 1970s, its growth has stabilized, and manufacturing is forecast to grow at an average compound rate of only 0.3 percent higher than that of the state. As pointed out above, the employment growth rate for the manufacturing sector remains below that of the state.

The industry composition of the manufacturing sector of the state's economy is expected to change. The mix in manufacturing output is increasingly oriented toward production of durable goods – those products with an average useful life greater than three years – and away from the nondurable goods – those products with an average useful life of less than three years. Saturn and Nissan are examples of growth in durable goods manufacturing.

Durable goods manufacturing, comprising 18 percent of the total state output of goods and services, has shown output expansion across business cycles which is projected to continue. Durable goods output will become an increasingly larger percentage of the state's economy, as its average annual compound growth rate is expected to exceed that of the state by 1.0 percent.

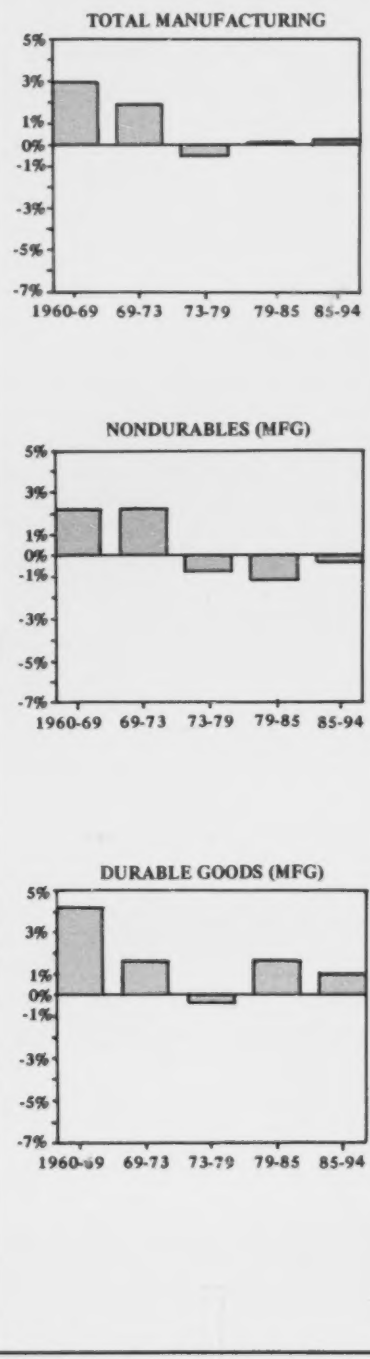
Within the durable goods sector, transportation equipment and nonelectrical machinery will be leading the sector's substantive output growth by growing at 5.7 and 4.8 average annual compound rates. These two industries comprise 35 percent of the durable goods sector. The only declining industry will be the lumber and wood sector, which is only 4 percent of durable goods output.

Nondurable goods manufacturing, which comprises 20 percent of Tennessee's GSP, will lose some prominence in the state's economy over the next nine years as the average annual compound growth rate of the state exceeds that of nondurable manufacturing by 0.4 percent. The relative employment share falls even more rapidly as the industry adopts labor-saving technology to become more competitive. The chemical industry is an example where investment is leading to more efficient production, but lower employment. The projected growth rates in nondurable production follow the same pattern as those of durable goods production, but with an overall lower level of growth.

Textiles and apparel are the declining industries in the nondurable goods sector as the continued pressure from foreign competition forces producers

FIGURE 5

REAL GROWTH RATES, SELECTED OUTPUT SECTORS OF GSP (Business Cycle Peak to Peak)



Textiles and apparel are the declining industries in the nondurables goods sector as the continued pressure from foreign competition forces producers out of this type of production.

out of this type of production. However, this sector is not without some growing industries. The strong areas in the nondurable goods sector are the paper, printing and publishing, and rubber and plastics industries.

Mining will continue to lose its relative share of output production, with real output falling between now and 1994. Rising production costs, coupled with foreign competition (in part due to the overpriced dollar) has forced output in mining down by 4.7 percent from 1984 to 1985. A mild expansion in output is projected to occur from 1986 to 1988. The downturn in 1989 is followed by a more significant drop of 5.7 percent as the 1990 recession is felt. The hardy upturn in the economy in 1991 is also reflected in mining as output regains half of the previous two-year losses by expanding 3.3 percent. Mining output will stabilize for the rest of the forecast period. Employment and employment per unit of output in mining is expected to continue to fall.

Construction growth for the state since the 1960s has averaged substantially less than that of the state's economy. The construction output growth rate across the next nine years will be closer to that of Tennessee's GSP growth rate because the average age of the population is rising, and older people are more likely to head a household; and headship rates (the portion of an age group heading a household) are projected to continue to rise over the next ten years as they have risen over the past 30 years. The projected annual construction growth rates indicate weak growth for 1985 and 1986, at -2.7 and 1.6 percent, respectively, after which only the 1990 downturn creates a significant variation from the strong, approximate 3 percent growth of subsequent years.

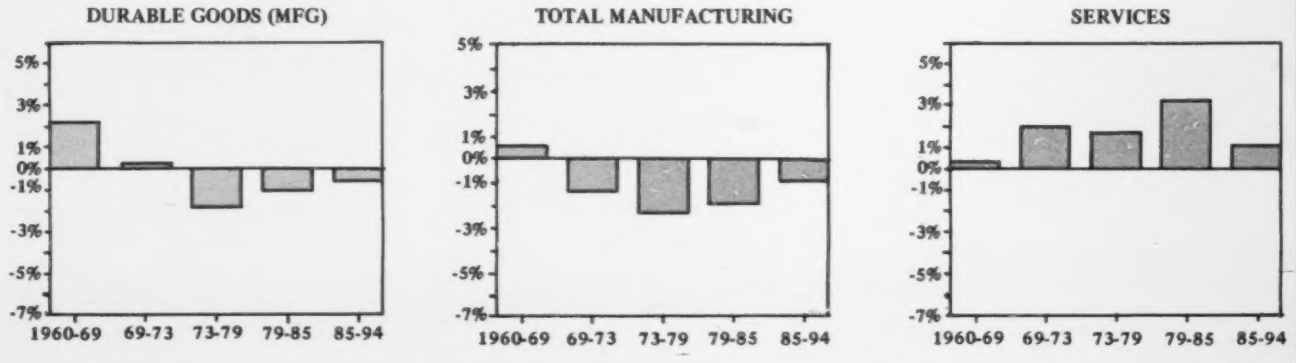
Average output growth rates will not vary much from that of GSP in trade; services; finance, insurance, and real estate; and the transportation, communications, and public utilities sectors, with this last sector showing the most significant projected growth. What is noteworthy about these sectors is that their rate of employment growth is well above the state average. Employment growth rates in these sectors is a significant factor in total state employment growth, as these four sectors together provide over 50 percent of the jobs in Tennessee.

Finally, the outlook in government employment and output shows both to be growing, although less than the state's average. TVA has reduced employment significantly in recent years, and it appears that the current administration will be seeking further cutbacks. Growth in state and local government output through 1994 will also fall short of growth in the state economy but will be greater than that of the federal government. ■

Ed. Note. This article has been condensed from the 1986 **Economic Report to the Governor on the State of Our State**, *prepared by the Center for Business and Economic Research for the Tennessee State Planning Office.*

FIGURE 6

REAL GROWTH RATES, SELECTED EMPLOYMENT SECTORS OF GSP
(Business Cycle Peak to Peak)



NOW AVAILABLE...
1985/86 CBER PUBLICATIONS

Business Location Determinants In Tennessee
The Full Employment Unemployment Rate
Changes in Tennessee The South, And The U.S. 1961-1983
TENNESSEE STATISTICAL ABSTRACT 1985/86

1 TENNESSEE STATISTICAL ABSTRACT, a 760-page standard annual reference for economic and social data in Tennessee, presents the most current historical information available for the state, MSAs, counties, cities and towns. The Tennessee Rankings section is of special interest to planners and decisionmakers involved in communications because it provides a means to compare Tennessee with other southeastern states and the nation in areas such as per capita income, population estimates, real estate and finances. $25.00.

2 BUSINESS LOCATION DETERMINANTS IN TENNESSEE is a study based on the results of a survey of 325 manufacturers who recently located new facilities or expanded existing ones within the state. Detailed analyses are presented of the decisions made by the locating firms: whether reasons for a site decision varied with the type of firm, with the location of alternative sites, or whether the firm was considering an expansion, establishment of a new enterprise, or a new location. $7.50.

3 THE FULL EMPLOYMENT UNEMPLOYMENT RATE: CHANGES IN TENNESSEE, THE SOUTH, AND THE U.S., 1961-1983 discusses Tennessee's experience relative to other states regarding that unemployment rate at which labor demand and labor supply are approximately in balance. When the FEUR is reached there are enough jobs in the economy so that every person who wishes to work can find work. Knowing the correct FEUR gives the policymaker a clear benchmark by which job policies may be guided. $6.00.

CBER Publications

To order the above publications, check the appropriate boxes. (Prices include shipping and handling.)

☐ Yes, I would like to order _____copies of the 1985/86 *Tennessee Statistical Abstract* @ $25.00 per copy.

☐ Yes, I would like to order _____copies of *Business Location Determinants in Tennessee* @ $7.50 per copy.

☐ Yes, I would like to order _____copies of *The Full Employment Unemployment Rate* @ $6.00 per copy.

Name _____ ☐ Bill me.

Address _____ ☐ Check Enclosed.

_____

Mail to: Center for Business and Economic Research, 100 Glocker Building, College of Business Administration, The University of Tennessee, Knoxville, TN 37996-4170 Telephone (615) 974-5441.

Center for Business and Economic Research College of Business Administration The University of Tennessee, Knoxville

1710-1

Spring 1986

SURVEY OF BUSINESS

QUALITY MANAGEMENT
THE COMPETITIVE EDGE

NOW AVAILABLE...

1985/86 CBER PUBLICATIONS

1 TENNESSEE STATISTICAL ABSTRACT, a 760-page standard annual reference for economic and social data in Tennessee, presents the most current historical information available for the state, MSAs, counties, cities and towns. The Tennessee Rankings section is of special interest to planners and decisionmakers involved in communications because it provides a means to compare Tennessee with other southeastern states and the nation in areas such as per capita income, population estimates, real estate and finances. $25.00.

2 BUSINESS LOCATION DETERMINANTS IN TENNESSEE is a study based on the results of a survey of 325 manufacturers who recently located new facilities or expanded existing ones within the state. Detailed analyses are presented of the decisions made by the locating firms: whether reasons for a site decision varied with the type of firm, with the location of alternative sites, or whether the firm was considering an expansion, establishment of a new enterprise, or a new location. $7.50.

3 THE FULL EMPLOYMENT UNEMPLOYMENT RATE: CHANGES IN TENNESSEE, THE SOUTH, AND THE U.S., 1961-1983 discusses Tennessee's experience relative to other states regarding that unemployment rate at which labor demand and labor supply are approximately in balance. When the FEUR is reached there are enough jobs in the economy so that every person who wishes to work can find work. Knowing the correct FEUR gives the policymaker a clear benchmark by which job policies may be guided. $6.00.

CBER Publications

To order the above publications, check the appropriate boxes. (Prices include shipping and handling.)

☐ Yes, I would like to order _____ copies of the 1985/86 *Tennessee Statistical Abstract* @ $25.00 per copy.

☐ Yes, I would like to order _____ copies of *Business Location Determinants in Tennessee* @ $7.50 per copy.

☐ Yes, I would like to order _____ copies of *The Full Employment Unemployment Rate* @ $6.00 per copy.

Name _____ ☐ Bill me.

Address _____ ☐ Check Enclosed.

_____

Mail to: Center for Business and Economic Research, 100 Glocker Building, College of Business Administration, The University of Tennessee, Knoxville, TN 37996-4170 Telephone (615) 974-5441.

PERSONNEL

C. Warren Neel, Dean
College of Business Administration

CBER APPOINTMENTS

David A. Hake, *Director and Editor,* **Survey of Business**

William F. Fox, *Associate Director and Research Associate Professor*

John W. Mayo, *Research Assistant Professor*

LeRoy T. Hansen, *Visiting Research Assistant Professor*

Maxwell J. Cornelius, *Manager, Computer Resources Group*

George A. Mundrake, *Coordinator, Instructional Support*

Patricia A. Price, *Sr. Research Associate*

Betty B. Vickers, *Research Associate*

Susan E. Bott, *Research Assistant*

Lillian Mason, *Research Assistant*

Melissa Wood, *Research Assistant*

Deborah W. Crowder, *Office Supervisor Computer Resources*

Carol E. Schmidhammer, *Research Associate*

Jean Knuckles, *Administrative Manager*

Jennifer F. Langston, *Sr. Secretary*

Donna Kemper, *Secretary*

Laura McCollough, *Clerk/Typist*

Mary Long, *Clerk/Typist*

Sandra L. Turner, *Data Specialist*

Graduate Research Assistants

Byron C. Goins
Maria Teresa Hocson

Consultants

Kenneth E. Quindry
Research Professor Emeritus

Art Director

Richard J. LeFevre, *Associate Professor of Art*

PUBLICATIONS GROUP

Jeanne P. McDonald, *Managing Editor*

Rebecca Kelly, *Publications Coordinator*

Joan M. Strong, *Editorial Assistant*

Patricia A. Hunley, *Word Processing Group Supervisor*

Patricia D. Flynn, *Word Processing Specialist*

Julia C. Elkins, *Word Processing Specialist*

Amy LeFevre, *Technical Art*

Jennifer Jordan, *Technical Art*

The University of Tennessee
Spring 1986
Volume 21 Number 3

Survey OF BUSINESS

CONTENTS

Campbell Soup: Cutting Cost and Improving Quality 4
by Ellen R. Kendall. *In an oral interview, R. Gordon McGovern, President and CEO of Campbell Soup Company, discusses his organization's full-fledged effort to embrace the Deming philosophy.*

Quality and Productivity: The Harley-Davidson Experience 9
by Vaughn L. Beals. *The author explains his company's endeavors to become competitive with Japanese manufacturers.*

Saturn: An Experiment in People Management 12
by William E. Hoglund. *This article stresses the importance of teamwork in achieving consistently high quality and productivity and shows how it worked for Saturn.*

Deming and the 14 Points: A Personal View 13
by Gipsie B. Ranney. *The author relates how W. Edwards Deming's philosophy has influenced industry worldwide.*

Future Organizations of Change 16
by G. Harlan Carothers, Jr. *Mr. Carothers explains the roles and responsibilities of each of the three personnel strata in instituting change.*

Webster City Products: Evolution of a Program 18
by John P. Patrou. *The author details how the use of Statistical Process Control has increased productivity and efficiency of operations at his company.*

Managing the Process: Introducing SPC 19
by Jeffrey D. Peters and William C. Parr. *The authors emphasize the importance of continuous improvement through the use of "ideal" consultants and well trained "champion" employees.*

Applying SPC in Service Industries 24
by Ray A. Mundy, Russell Passarella, and Jay Morse. *This article outlines the payoffs of SPC, detailing how its applications affected the productivity of a particular company.*

Quality Management Applications in a Field Marketing Organization 30
by Walter Ambrogi and Donald L. Blair. *The authors outline techniques developed at Eastman to provide a systematic process for increasing quality and value.*

James River Corporation: Development of a Quality Culture 32
by Dan Butterfield and Patrick Burke. *This article provides a methodology for instituting quality assurance techniques using the Deming approach.*

The people behind this issue:
The UT Management Development Team

Clyde R. Keller
Associate Dean for External Affairs

John E. Riblett
Director, Management Development Programs

Ellen R. Kendall
Assistant Director, Management Development Programs

Anne M. Mayeux
Assistant Director, Management Development Programs

SURVEY OF BUSINESS, The University of Tennessee, Knoxville (ISSN 0099-0973), is published quarterly by the College of Business Administration, Center for Business and Economic Research, The University of Tennessee, Knoxville to inform the Tennessee business professional about current economic and socio-economic trends and techniques developing in the state. Authorization No. EOI-1490-001-83. Back issues and article reprints may be ordered at $1.25 per copy. Address correspondence to Editor, Center for Business and Economic Research, Suite 100, Glocker Hall, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170. Second class postage paid at Knoxville and Nashville, Tennessee. Requests for inclusion on mailing list and address corrections should be sent to the same address. The publisher of the **Survey** *assumes no responsibility for statements made by writers. Articles reflect the opinions of the authors. Postmaster: Send Change of Address form 3579 to: Center for Business and Economic Research, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170.*

CONSULTING EDITOR'S COMMENTS

Two years ago, in the spring of 1984, the **Survey of Business** was dedicated to the subject of Quality Management, specifically the use of statistical process control in business and industry. Reception of the issue was outstanding. The Management Development Center received numerous requests for additional copies, and in phone calls, letters, notes, and face-to-face comments, managers from all parts of the United States and some foreign countries expressed interest in learning more about quality management – in particular, productivity improvement through quality improvement. These managers represented companies ranging from heavy manufacturing to banking and from high volume production to one-of-a-kind prototypes.

In the summer of 1985, David A. Hake, Director of the Center for Business and Economic Research, and I were in Hungary, in response to an invitation from the Minister of Industry, to talk with representatives of business and industry about the various services our respective organizations were providing in the U.S. Quality management (specifically SPC) was the topic most Hungarian managers wanted to discuss. In fact, one company, Ikarus Body and Coach Building Works, had the entire quality management issue translated into Hungarian so that all of its managers could read it!

All of this combined interest led to this issue of the **Survey** – "Quality Management: The Competitive Edge." Thus, although we continue the theme started in the 1984 issue, readers who remember the previous articles will recognize new approaches and applications to the quality management theme.

We are pleased to include articles by a number of chief executive officers: R. Gordon McGovern, President and Chief Executive Officer of Campbell Soup Company; Vaughn L. Beals, Chairman and Chief Executive Officer for Harley-Davidson Motor Company, Inc., William Hoglund, former President of Saturn Corporation and currently a GM Vice-President in charge of the Buick, Oldsmobile and Cadillac Group; and John P. Patrou, President of Webster City Products. This group presents a top management perspective on a number of important considerations ranging from total systems involvement, material resource planning (MRP), through statistical process control (SPC) through just-in-time inventory (JIT), with consideration of computer integrated manufacturing (CIM), as well as the role of human resources, technology, and management by upper, middle and lower levels.

Supporting the CEOs' overviews of productivity improvement through quality is an article on the role of change in organizations by former Vice-President of Productivity for Harris Semiconductor and currently a consultant in productivity improvement, G. Harlan Carothers, Jr. A discussion of Deming's Fourteen Points for Top Management by Gipsie B. Ranney, Associate Professor of Statistics at U.T. and a founder of the Productivity Through Quality Institute, answers the question of what American industry must understand and apply to be competitive with their Japanese counterparts, who were introduced to Deming's Philosophy in the 1950s. Ray A. Mundy, a professor of Marketing and Transportation at The University of Tennessee, Russell Passarella, Vice-President of Olympic Limousine Service, and Jay Morse, Financial Analyst for C.S.X., provide an interesting look at productivity and quality improvement in a service industry using statistical process control.

In addition, the issue includes articles by managers from companies with successful Productivity Through Quality programs. Jeffrey Peters and William Parr of Harris Semiconductor Sector discuss implementation considerations; Donald L. Blair and Walter Ambrogi of Eastman Kodak Company outline the Eastman's Quality Management Process, and Dan Butterfield and Patrick Burke of James River Corporation discuss the requirements for successful productivity improvement at James River Corporation.

The final article, devoted to the cutting edge of Quality Management, discusses the new research center that is being developed around the Productivity Through Quality programs and the needs of the companies who support continual improvement of quality throughout the organization.

The College of Business Administration is pleased to be a part of a major movement by American business and industry towards greater concern for quality and the needs of the consumer of products and services. The qualities that once made American business the envy of the international competitors are on their way back.

Clyde R. Keller,
Consulting Editor

THE MANAGEMENT DEVELOPMENT PROGRAM: RESPONDING TO GROWTH & CHANGE

Ellen R. Kendall and Anne M. Mayeux

The Institute for Productivity Through Quality was organized at The University of Tennessee, Knoxville, in the fall of 1981, at a time when U.S. industrial ranks were beginning to awaken and react to the quality edge of their Japanese competitors. Although Americans wondered whether there was a significant cultural difference or a secret management approach that enabled the Japanese to produce goods of high quality at competitive prices, investigation revealed that Japanese industry had simply taken American know-how, mastered it, refined it, improved it, and put it into action. In this case, it was statistical process control techniques taught to them by – ironically – an American statistician named W. Edwards Deming.

A 1980 NBC White Paper asked, "If Japan Can, Why Can't We?" But the question became not "*Can* we?" but "*How* can we?" One answer came from The University of Tennessee and the Institute for Productivity Through Quality – a three-week comprehensive course. In the first few years, hundreds of managers were thoroughly trained in SPC techniques, enabling participants to begin their own company training programs and processes of implementation. Yet, there was still the need to find ways to gain the support and commitment of top management.

The Japanese already knew that SPC was just a tool rather than a goal. They knew that quality management must be a way of life, not just another program. This was a lesson that American industry was just beginning to learn. As a result, in the fall of 1983 the Institute expanded to include a one-week Senior Executive Institute. Described initially as "an opportunity to acquire a basic understanding of statistical process control and its managerial implications," the course has evolved dramatically, partially through the involvement of William E. Conway, former CEO of Nashua Corporation and President of Conway Quality, Inc. Mr. Conway devotes an entire day to his "Right Way to Manage" sessions, in which SPC is seen as a tool, "necessary but not sufficient." Other tools, plus significant management changes, are required for creation of the new system.

Along with Mr. Conway's increased involvement came an upward shift in the management level represented by participants. The course became solidly "senior executive," and course content was completely revised to reflect this shift. As of March, 1986, a strong emphasis is placed on management strategies, use of SPC as a management tool, and the adoption of a new way of managing with revised corporate policies, practices, and procedures in support of the new system.

Not long after the development of the Senior Executive Institute, another need emerged from participating companies: the need to go beyond manufacturing processes, to apply a quality management approach to nonmanufacturing areas and service industries as well. Thus was born the Administrative and Service Institute. While the course content includes comprehensive SPC instruction (a trademark of The University of Tennessee), it also contains a new element for the Institute – a heavy concentration of nonstatistical sessions designed to aid participants in the implementation of quality systems. Classes include sessions on group process training, managing change, managing meetings, and a sharing of implementation problems and strategies.

Another response to the needs of business and industry is the development of UT's Design of Experiments Institute, formulated to provide businessmen with the sophisticated techniques of designed experiments in order to address more fully process improvement problems. Using PC-SAS as the software aid and providing an IBM-computer for each participant, UT will offer a three-week course beginning this month. The original three-week Institute has not been exempt from the process of continuous improvement.

The basic content of the course continues to evolve through the inclusion of additional case studies, now drawn from a variety of industries, increased time allotted for implementation issues, the inclusion of industrial engineering faculty and other non-UT faculty to provide new perspectives and expertise and the planned incorporation of personal computers and analysis of SPC software packages. Perhaps the most basic aspect of continuous improvement is the "tool bag" provided in the course. This SPC tool bag will continue to reflect constant feedback from participants in regard to usefulness and relative benefits from the course.

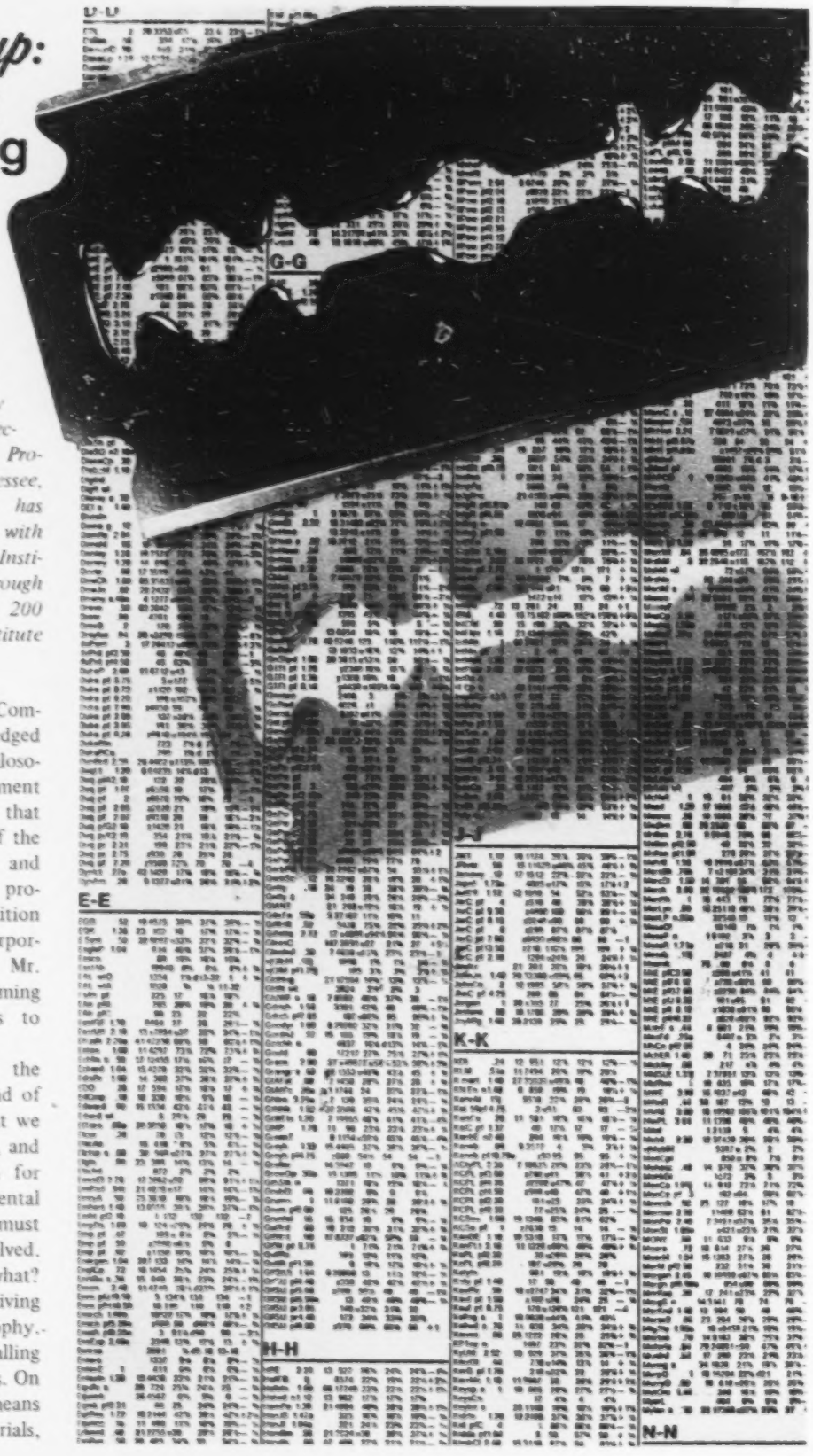
An important vehicle for this feedback is the Institute's Alumni Conference, held every eighteen months to provide an opportunity for alumni to relate, through panel discussions and presentations, their successes and failures regarding use of the statistical tools. Yet, the ultimate feedback comes in the form of the Institute Achievement Award Competition during which companies provide evidence of the implementation of a total quality management approach. To ascertain the depth of such implementation, the 1987 competition will include on-site visits by Institute faculty.

The Institute's four-and-a-half-year history is one of growth and change. Its success can be primarily attributed to the supportive relationships that have been built between the University and alumni companies. These relationships have provided continuous feedback in regard to the Institute's direction, especially in regard to new program development. As new industries become involved, fresh challenges arise. The Institute will meet these challenges by continuing to develop programs that help business and industry respond to worldwide competition. ■

Campbell Soup: Cutting Cost and Improving Quality

Ellen R. Kendall

The following is an oral interview with R. Gordon McGovern, President and Chief Executive Officer of Campbell Soup Company, conducted by Ellen R. Kendall, Assistant Director, Management Development Programs, The University of Tennessee, Knoxville. Campbell's, which has formed a close relationship with The University of Tennessee's Institute for Productivity Through Quality, has sent more than 200 Campbell managers to Institute programs.



Kendall: Campbell Soup Company is in the middle of a full-fledged effort to embrace the Deming philosophy and a total quality management approach. In spite of the fact that Campbell has about 80 percent of the U.S. condensed soup market, and produces more than 1,000 total products, the threat of world competition is a motivating factor within the corporation to improve quality. Mr. McGovern, will you discuss the Deming philosophy and how it relates to Campbell?

McGovern: I'd like to put the Deming philosophy into some kind of context. What is important is that we are trying to focus on consumers, and that goes back to our "Search for Excellence." With your fundamental drive focused on consumers, you must have the entire organization involved. The question is: involved in what? Quality and value are really the driving forces behind the Deming philosophy. This is the concept we are calling high quality/low cost/total systems. On the manufacturing side this means just-in-time delivery of raw materials,

low inventory, producing within specifications, small batch controls, automatic controls, and quick changeovers. That means a tremendous amount of training and retraining for the people on the floor. I visited one of our plants in Texas last week, and they are deep into process and automated controls and participation in quality circles. We have over 450 quality circles: they are now an integral part of the way our plants are managed. At Paris, I went out into the plant and looked at the control charts down on the floor, with the workers doing the charting. Those are the very people who *should* do it.

The whole idea behind the framework of this concept is to give the consumer a better product in the end – a better value for better quality. And consequently everybody has to get involved in that and focus on our consumer drives. In other words, it's not only an internal thing; it's also an external thing, a big difference. Now, the application is very important, and that is why Deming is really a rallying point for us at the manufacturing level and is probably why his philosophy is also spreading out into the service level.

The question is whether we are implementing it in the proper way. My argument is that right now we are not as efficient as we should be. The Japanese are setting high world-wide standards, and if we don't get up there to compete, they are going to drive us out of the market. Japanese companies now operating in the United States with their own plants in the soup business have taken 9 percent of the market in just four years. Take Japanese automobiles, TV sets, microwave ovens, anything you look at, the pattern is the same. They come in at the low end and deliver quality and value and move on up to something that is much more significant and take the market right out from underneath you. We've got to match their standards of quality. I've been over there two or three times and come back scared every time. On April first of this year we completely reset our sales force for better regionalization, focus on the consumers, consumer people-oriented merchandising in the stores, individual store merchandising, a whole different approach.

Kendall. Would it be fair to say then, since you came into Campbell with a very consumer-oriented approach, that Deming has provided a vehicle for change and the techniques for change?

McGovern: Yes, a key approach in the techniques, especially in manufacturing, because manufacturing then has to deliver the product that marketing conceives of and sells, and if you don't deliver what the customer really wants or what the marketing department hoped they were going to deliver, you don't have a business. To get quality and diversity you need Deming, you need to have control over what you are doing.

Kendall: What does that mean in terms of capital expenditure? I know that in some Campbell plants the management is really struggling to try to get under control some of the processes that are not capable because the equipment is old or outdated.

McGovern: The only problem we have now is that there are not enough engineers to replace the machines fast enough. It is not a problem of having money. We've dedicated the money and we're dedicated to the concept, so what we are trying to do is to use Deming and SPC techniques to find where our main problems are. In other words, to pick up where we are out of control. The answer is to establish where the critical factors are to get those under control and get the design people working on the ones that aren't under control. We haven't really modernized the plants, and Deming is really showing us how to point the way. And it is a timetable driven by fear. We think that if we don't get there in five years, we're not going to be around.

McGovern

Everyone has to have a total conceptual understanding. The linkage is the key, because nothing works unless the whole system works. That's a very important principle. That's how it's going to work.

Somebody's going to come in and make a chicken noodle soup for 19¢ or a better Le Menu Dinner.

Kendall: And so you are very much driven by survival now?

McGovern: Absolutely. That's the way we are positioned. This is not a plaything. It's not a toy. It's not a badge, it's not a slogan, it's a matter of survival.

Kendall: How are you, as CEO, translating your philosophy into action? How do you see your daily activities directed toward the implementation of that philosophy?

McGovern: You point the way, you reinforce. We have 45,000 employees and about $4.2 billion in sales, and what we really have to do is orchestrate and support the execution of the philosophy. In other words, I go into plants, I want to encourage the plant manager, I want to compliment him, I want to see first hand the quality circles and charts on the floor. Recently, in the Paris, Texas plant I wanted to see their enthusiasm. I found it intense. I wanted to find out if they understood where we were going, and the answer was, "Look, we've got it in parts, but we haven't linked it yet." **The linkage is the key, because nothing works unless the whole system works**. That's a very important principal. So everybody has to have a total conceptual understanding. That's how it's going to work. You can't have anybody saying, well, this is something for somebody else, or, I don't have to worry about consumerism.

Kendall: How are you doing in terms of your timetable?

McGovern: Well, that's why I went to Paris. The sales force has 15 months to get themselves sorted out, in its new, major realignment. For manufacturing, I'd say three to five years, because there is just so much of it. And I think what you look for is the enthusiasm and the dedication, rather than just the specifics of how much is happening. Computers will be another integral part of it, because you can't do Deming without computers. We are putting millions of

dollars into trying to get what I call real time – orders coming from the customers, being processed all the way through. And accounting must be totally involved and tied into the information system.

Kendall: You mentioned to me earlier that when you toured the Nissan plant, it was a frightening experience. Can you elaborate?

McGovern: We're sending people over there now to get scared, because they don't seem to get scared too easily here. But anybody who goes over there, and goes to the marketplace will see well-dressed consumers who are very picky about what they buy. They expect excellence in food, in cars, in products. So we had better quickly recognize that U.S. consumers are latently dissatisfied. No matter how satisfied they appear to be, they are not as satisfied as they would *like* to be. In the U.S. I think we have a complacency problem. We *have* to know that there are people in the world doing things better and that we need to catch up with them. If you want to compete worldwide, you have to compete with the best of them in their markets. That means competing with a worldwide standard. You can't be in the United States sitting complacently, providing 80 percent of what the worldwide best standard of excellence is, and assume that you are going to survive with the rest of the world. It doesn't work. They'll come in and take your market.

Kendall: Can we talk about the execution a bit more? As you go through this change process, how do you create new policies, practices, and procedures to support the change? I know you have a new mission statement at Campbell – a first step. Then how do your managers know what they are to do every day in your high quality/low cost/total system plan?

McGovern: A very fundamental question. I'll just give you my own experience. When we first came, we tried to find the mission. And that unfolded a little bit. In 1982-83, we knew we were a food company, but we moved over to "well-being" (which is a combination of food and exercise) to broaden that just a little bit. And then we said, "Okay, what are the financial objectives?" So everybody knew that we weren't playing games; we had to measure up against the competition. We identified the top 25 percent of our competitors and decided that we wanted to be in the top 25. Then we backed up, and I started reading all the material I could on Campbell. I identified six guidelines: quality, value added, value to the consumer, nutritional goals, low cost production, and advertising the daylights out of it. I said, "That's Campbell." Then we broke the existing divisions into businesses and split the businesses into small elements of profit and loss where I can say, "Okay, you have a monthly business unit's statement, and you've got a consumer, and you've got a product. You go make it work. You've got the assets. Make the assets work."

So they have a mission, they have guidelines, and then they have an organizational structure which allows them to attack the issue. What I give them is the right to tell the R&D people what to do. In other words, they say what kind of products they want in the short term. And then we measure them. I don't want to kill the marketing emphasis, but I want low cost and I want quality and value. This is Deming. So we are meshing the two and saying quality as value is low cost. Quality and value are what the consumer wants.

Deming says you have to control the variables. You can't whip people to do things they can't do anyway. Then he puts a heavy emphasis on getting staff people to design properly – the right configuration of packaging or whatever it is that makes the whole system work. We are just getting into that stage. Our design part of the plan is a little embryonic at this point, and we are getting staffed up to do that better.

Kendall: Is there a shift in how managers are measured in terms of their performance? Or is the performance emphasis still "bottom line?"

McGovern: We are shifting that whole emphasis. At the plant level what we are striving to do is to get them to address quality and performance and make it tie to the Deming philosophy. We are not there yet, but we are running close. We want a compensation, a written plan and policy in the plant to reward, from management on down, for performance to achieve quality, value, and low cost. That's not easy, because you've got to get the measuring sticks in there, and now we are trying to figure out what those measuring sticks

Understand a total quality management system in the total context of what you want to do. Understand the mission, understand the goals, understand the directions, understand what total systems mean. The message is: get started. Do something about it. Everybody must get involved.

> We have to realize that U.S. consumers are latently dissatisfied. No matter how satisfied they appear to be, they are not as satisfied as they would *like* to be. In the U.S. we have a complacency problem. There are people in the world doing things better, and we need to catch up with them.

are and how are they going to be reported. It isn't the old classical military system with the general, the major general, and the colonel, and somebody at the bottom gets a slip of paper that says, "Do this."

Kendall: How are you going to do that? To change the "old line management?"

McGovern: All you have to be is young of mind and know that this is going to be a different way of doing things and that everybody can be a part of it. I think that we are right at the middle of that right now. The fact is that now it is something that employees see impacting on their jobs, and everybody is really uncertain as to where they fit, especially in the middle management. The top management understands the concept and has caught the implications.

A few weeks ago I went to the Camden, New Jersey plant, which is an older plant. With $37 million in renovations coming on, I asked them what they were doing about human resources. I said, "Human resources is just as big of a problem here as the equipment, and that's the whole concept, so you better get with it." Well, now they are flooding in there, and asking what the structure is going to be, what the leadership is going to be, how the reporting systems are going to function, how the compensation is going to really get set up. Now, they are into it. Where the corporate level had been asleep and weren't doing much, now they too are right in the middle of this whole thing. They currently are looking at a very practical execution timetable of three-to-five years.

Kendall: You're also working with your vendors heavily. Could you describe your efforts?

McGovern: Well, we are doing what the automobile manufacturers have already done. We are going back to our vendors and saying we want our supplies "just-in-time." We want it to conform to certain specifications. Japanese suppliers give us quality and ask how they can do the job better, while the American attitude has been, "Relax, only a few cans are messed up." The fact that we now get about 15 percent of our steel from Japan has got to tell you something. Now we go back to our suppliers and say, "They can do it, why can't you?" and as we find suppliers who agree to that, our reject rate drops. Fundamental Deming. We have to weed out people who can't comply with what we want, when we want it, because we can't afford to do anything else.

Kendall: Have you had to sell these ideas to your board?

McGovern: Our board is following us. Classically it has been the kind of issue that a board has not been highly involved in. However, once they were exposed to it, they got very interested in it. We recently presented them the sales force reorganization as part of the total systems approach. We began briefing them last June and we are going to update them again this June. We're just going to keep on working our way through it. We don't know what the total cost to get there will be, but this transition is going to be very expensive. So we are trying to quantify that for the board. Basically they are very supportive, and I haven't had any resistance to the question of our getting more competitive and more quality and value-oriented. Deming is known to them, and we are taking them up to our Napolean plant in May, so they can see first hand some of the quality circles, and computer line processors.

Kendall. We have many mid-level managers who come to the University of Tennessee's Institute, who believe in the new way, who believe in total quality systems, but they are "lone souls," and they must sell their upper management. Are there any suggestions from you as to how to sell it from that level? Can somebody at that level succeed in convincing upper management?

McGovern: Yes. First, those people must seek allies. One of the first things to do is to realize that you are one of many, and that you are supported by a network – maybe not your boss or maybe not your own group – but

certainly the network. The next thing to do is to understand that it takes time: it just doesn't happen overnight. Start slipping in some things that can help you get the change of attitude, maybe give the boss some write-ups and material from magazines that is current. Once in a while you can innovate something yourself on your own job, maybe a statistical quality control chart at your station. One thing that helps is to say, "Oh, that works." Even if it is just a little thing. There are many little things that can build up into much bigger things.

Another asset is to have enthusiasm, to sell your idea. You have to tell people, you have to feel confident that you can talk about these things and not get emotional or destructive. Don't challenge the boss all the time, don't kick him in the pants all the time to make your point, but just keep working at it and gradually that critical mass builds up. I think one way to do that is have the CEO visit a customer. All you have to do is visit customers, and you come away feeling pretty enthusiastic about doing something. Customers are demanding, and I don't know anybody who's so perfect that the customers can't tell them about fifty things that need improvement. I go out there and talk to the customers, and that's what I get. I get pounded, and then I tell them that we are here to find out how we can do it better.

Kendall: How would you advise top management in establishing a total quality management system?

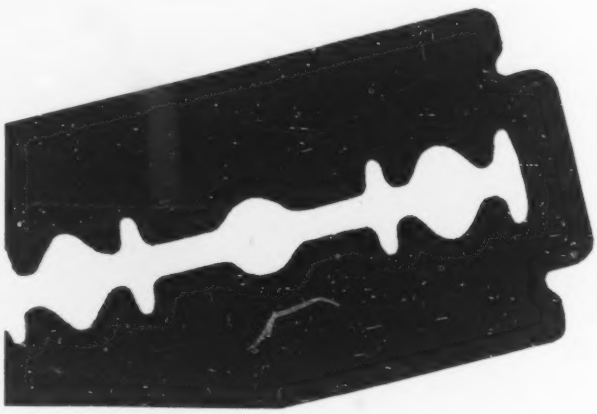
McGovern: I think the first thing is to understand it in the total context of what they want to do. Understand the mission of the company, understand the goals, understand the directions, understand what total systems mean. I put out a one-page memo trying to explain it, and I was surprised when people came back and told me it was helpful. The message is: get started. Do something about it. Everybody — engineering, purchasing, any part of the company — must do something, get involved. The only way to get excited is to get involved. Don't sit back looking down from the bleachers at the field; get down on the field and play. What we are trying to do now is to make sure that everybody understands that they are involved. Nobody is exempt, no single department, no single person. Total systems is total systems: everybody, everything. Top management has to get informed and then action-oriented. That's where we are now at Campbell. We are executing.

Kendall: In the context of knowing that many companies are struggling with these same issues and the implementation of the same approach, how do you know that Campbell's will succeed? What factors will help it?

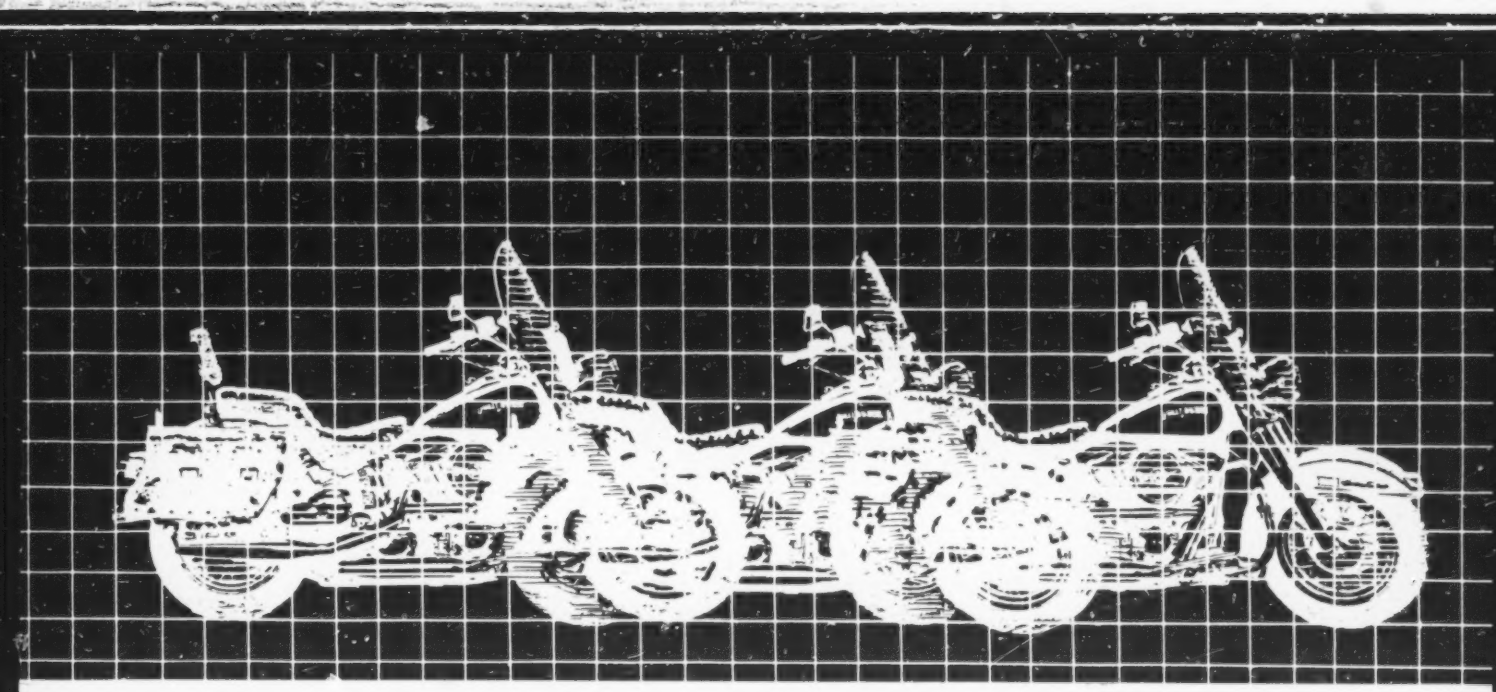
McGovern: There isn't any question as to whether it's going to succeed or fail. If success is a given, the only question remaining is how long is it going to take us to get there, and how much will it cost? It takes people, time, energy and money, but I don't even entertain the question of whether it is going to succeed or fail. I've already made up my mind that in order for the company to survive, it *has* to succeed, and therefore it *will* succeed. I am not even *considering* failure. What I'm really considering now is the people price, and how many computers we need and where, and making sure that we don't go into these things and find that we've got burdens we can't cope with. In the ultimate analysis, you have to be a sound, financially operated business. You can't be all things to all people. We are working on a plan-of-tomorrow concept.

Kendall: Is there any area where you are going to have the opportunity to start from the ground floor and build the plant of tomorrow?

McGovern: I think we may find that opportunity. I think we have to find out first what that plant of tomorrow actually is. I suspect it's going to be highly automated, highly computerized, and probably rather small, with a few highly-trained people. I think it's going to have all the Deming qualities built in, with very little overhead, and a lot of participation by all the employees. We also need to have a certain statistical quality from our suppliers and set the standards and agree upon them. With the same approach, companies can statistically control their variables within the organization. If we can also convince the people who are into the business of supplying American Industry, they might find that in the long run, they are way ahead of everybody else. In other words, it's the competitive edge. ■



Quality management *has* to succeed. If success is a given, the only question is, how long is it going to take us to get there and how much will it cost? I've already made up my mind that it *has* to succeed, and therefore it *will* succeed.



Quality and Productivity: The Harley-Davidson Experience

Vaughn L. Beals

If American industry expects to compete with Japanese manufacturers, achieving quality and productivity parity is a simple matter of life or death. Achieving these goals takes statistical management techniques, employee involvement, just-in-time inventory, and operator responsibility for production, quality, and machine maintenance.

Harley-Davidson would not exist today if we had not freed up cash through just-in-time techniques. Nor would we exist if our manufacturing people had not achieved major productivity improvements which converted major losses to small profits – on declining volume. And, we will surely not survive in the long run if we do not ultimately achieve quality and productivity parity with the Japanese. That is our goal, and we intend to achieve it – before the end of this decade. Statistics is only a single tool – not an entire tool box. To be competitive *by international standards*, industry needs statistical management techniques – and several other tools as well.

The previously mentioned tools – statistical management techniques, employee involvement, just-in-time inventory, and operator responsibility for production, quality, and machine maintenance – all have to be implemented simultaneously. Done together, they result in a process of *continuous improvement*, and that is the real payoff – doing it better tomorrow than yesterday and for all the tomorrows in the future. That is what leads to counting manufacturing flaws in parts per million, rather than in percents, and that is what leads to the highest productivity.

Unfortunately, the majority of U.S. manufacturers are still under the impression that increased quality means *increased* costs. However, the truth is that increased quality and reduced cost can be achieved at the same time.

The Competition

Harley-Davidson is about a $300 million company with 2,300 employees. It was owned by AMF from 1969 to 1981, and in June of that year, the officers purchased it in a leveraged buy-out. For over 25 years we have been competing with the Japanese. We have abandoned our scooter, snowmobile, golf cart, and lightweight motorcycle product lines under the Japanese price and quality pressure. Today we are in only the heavyweight motorcycle (883cc to 1340cc displacement) market. And, our competitors know by now that we have no intention of giving up in that market.

The Japanese approach to the motorcycle industry was not unique. They attacked in areas that did not threaten the established industry, and they used their high quality/low price/high volume strategy.

We were busy responding to the growing volume demands of the market, and until 1976, we could sell anything we made. Besides, we did not really understand how great the Japanese basic cost/quality advantage was (nor did anyone else), until the end of the 1970's or even as late as 1980.

They furthered their market penetration by dumping, as the U.S. Treasury Department determined in 1977. After establishing a beachhead in the market, they then began to broaden their product line. They directly copied our styling, our ads, and our marketing strategy. Then they flooded the market with imports and built up an 18- to 24-month supply of motorcycles in the United States.

What kind of competitors are the Japanese? They are excellent engineers. They are excellent manufacturers. They are well financed at low rates of interest, and they are tough as nails. But, they do not have any magic. It is not robotics or automation that gives

them their competitive edge. It is not substandard wages. It is not culture. And, it is not the morning calisthenics and company songs. What it is, is management – no more/no less. The Japanese are outstanding professional managers. They understand their business. They do not subscribe to the theory that a good manager can manage anything. They are not fooling around with acquisitions or mergers. They are minding the store – and minding it very well. In addition, they pay attention to even the smallest details of the business.

But their strategy should be carefully sorted out from their tactics. Their strategy – and their fundamental advantage – is simultaneously achieving high quality and high productivity. All the other aspects can be called tactics. And, their quality and productivity is not just a little better than U.S. practice – it is a lot better. For example, they can claim 90 percent reductions in raw material/work-in-process versus U.S. average; two to three times the productivity of U.S. averages; and quality where rejects are measured in parts per million.

Learning to Compete

Competing with and beating the Japanese requires a total concept: *genuine* employee participation in all aspects of the business. You have to *believe* – really believe – that your workers can solve their production problems better than your engineers. You have to adopt their manufacturing methods. This means just-in-time inventory – KANBAN. We call it Materials-As-Needed (MAN). You have to adopt flow processing instead of batch processing (short setups). This process reduces inventory, but more importantly, it improves quality. You have to *believe* that higher quality does not mean higher cost, but rather lower cost. You have to give employees full responsibility for production, quality, and basic machine maintenance and adjustment.

Finally, you have to use statistical management methods – to train your people in statistical analysis on the floor and in your offices so that *they* control their process. And, you have to have plant management that is fully dedicated to the changes. If they are not, you have to change them.

All of these together result in a process of *continuous improvement* in quality and productivity that leads ultimately to making every piece the same – rather than making them to spec.

Unless every employee is fully using his mind, as well as his machines, it will not work. In a 2,500-man plant, you want to have 2,500 plant managers – not one. If you fully adopt their methods of operation, it will work. It will work in Detroit, Milwaukee, and Cleveland, as well as it works in Tokyo. A U.S. farm boy or a production worker in Detroit can be just as efficient as his Japanese counterpart, if he is managed the same way, and he will be a lot happier, to boot. It is also important to convince your suppliers to adopt the same methods.

Harley-Davidson Results

What kind of results can be expected? To whet your appetite, let me report on some of the progress that has been made at Harley-Davidson. In a three-year period we have seen the following results:

Beals

- Scrap and rework are down two-thirds.
- Defect-free motorcycles, as measured by our dealers, have tripled.
- Warranty costs have been cut in half, while the quality staff was cut by two-thirds.
- Recalls have been reduced from one every two months to one every eight months.
- Product liability claims have been reduced 70 percent.
- In the last year we have cut reject rates by over 60 percent on our smallest product line and by over 90 percent on our major line.
- We have increased productivity 40 percent in three years, and cut grievances in half while holding wage increases below 1.5 percent per year.
- Inventory turns are now approaching 20 times, versus the 3.5 national average.
- Percent complete has increased from 60 to 98 percent.
- Both major plants will be operating without stockrooms by year's end.
- Float (vehicles between the ends of the assembly line and the start of the crating line) has been cut by over 80 percent.
- We have realized a 23 percent reduction in manufacturing space.
- Gross margins have returned to earlier levels, despite a 28 percent drop in production and sub-inflation pricing.
- Cost reductions exceeding 3 percent of sales will be realized in 1986.

Even with these remarkable results, we think we are just getting started. We believe that we are only 25 to 30 percent on the way to our goal.

United States industrial experience – including ours – says that quality and productivity parity can be achieved in large complex manufacturing plants, in unionized plants and even in those plants with a history of poor union relations, but it takes five years and then some to make the transition. When it is all done, you still may have a wage rate disadvantage. However, we also have some distinct advantages over the Japanese. For example, our supply lines are shorter and hence inventory and transportation costs are considerably less. Clearly we need to keep labor costs under control. But first and foremost, we need to manage as well as our competitors.

To successfully meet the challenge of the Japanese, businesses have to achieve parity in both quality and productivity. If they are not prepared to do that, they should find a buyer for their business. For those who decide to make the change, there are years of hard work ahead.

Management Implications

Management implications of these changes also have to be considered. First of all, senior management has to believe in the program. This revolution cannot be started at the middle management level. At the outset it is unlikely that the senior management will under-

stand all of the ramifications of the transformation it is undertaking. We certainly did not. However, senior management just has to believe in the basic direction and have a commitment to change. Full understanding will come with time and interaction with others involved in the same process. The tough part is getting the message down into the organization to middle management, to the supervisors and foremen, to the workers and their representatives and to the suppliers.

Systems have to be changed. Supplier relations have to change from an adversarial price negotiation to a partnership with emphasis on quality, delivery and supplier's cost. A company must go to long-term, sole-source procurement from fewer suppliers, rather than low price/dual sourcing and short-term buying. We have reduced our suppliers by 50 percent without a change in material content. In terms of management attitude, business must get *customer* oriented – not ROI oriented. Managers must make sure that it is *their* new products – not competitors' – that are outdating the old ones. Sometimes the most important element in the decision cannot be quantified. A financial analysis may suggest that it is noneconomic to invest further in reducing scrap from 3 percent to 1 percent, but the Japanese competitor keeps eliminating errors. Harley-Davidson makes wiring harnesses for a computer manufacturer at 30 mechanical errors per million and zero electrical errors out of nearly 10 million.

Future Implications

We are now starting to completely re-engineer our product line at Harley-Davidson to make it easier and cheaper to make the product right the first time. This requires a totally different relationship between engineering and manufacturing – a partnership.

We are also seeing opportunities for improvements in administrative areas. Much of cost accounting loses its importance when variances approach zero. Perpetual inventory becomes a luxury as the cost of taking a physical inventory becomes trivial. Computers are used less in a just-in-time inventory system and may, in fact, not be needed for materials planning and control. This is another facet of a "continuous improvement" environment.

Timing/Urgency

We started our transition ten years ago, and we are still not finished. We increased our engineering budget sevenfold. We broadened our product line from three to fourteen models. We invested in research and development and capital investments at twice the national average. We revamped every management system from top to bottom. We started Quality Circles in 1978, just-in-time in 1981, and statistical process control in 1983. It will be another three years, at least, before we achieve our goals, and after that, we will have years of further refinements ahead of us.

Harley-Davidson is in the consumer durable business, where emotion is a significant part of the buying decision. I can say with total confidence that if Harley-Davidson had been in the *industrial* products business, where the buying decision is quantitative, we would not be here today. It took us too long to react to the competitive situation. The basic dilemma is that by the time a company really figures out what it has to do and does it, it may be too late. Those who are not competing with the Japanese yet, need to start now – not later.

Companies should think for a minute what they could do to their *domestic* competitors if they could eliminate 90 percent of their capital invested in work-in-process, and if they could double or triple productivity while achieving quality levels where errors are measured in parts per million.

This has worked well for Harley-Davidson in domestic competition. Our successful bid in 1985 on one product was 33 percent below our price in 1981. On another, we cut the price 20 percent versus our 1982 price. Our scrap rate was cut 75 percent in two years. Inventory was turning well over 30 times at the end of 1985. With an environment of continuous improvement established in this production unit, we expect to improve even this outstanding performance. The result is that we are making a good profit on a bid business, and our domestic competitor has not captured a contract for over four years.

Summary

To *successfully* meet the challenge of the Japanese, businesses have to achieve parity in both quality and productivity. If they are not prepared to do that they should find a buyer for their business. For those who decide to make the change, there are many years of hard work ahead, including two to three years in which little progress is made. But then it will start to come – and come fast. Quality, productivity, and employee attitudes will all begin to improve measurably, while inventory melts away. However, there will be a million problems along the way. A quality circle here, a little statistics there will not do it. Attitudes need to change. And the change must be approached with a tremendous sense of urgency and full commitment. A company must really *believe* that Japanese competition can wipe that company off the face of the earth. The prescription necessary for successful competition is employee involvement, just-in-time inventory, *and* statistics.

The encouraging thing is that it can be done. The U.S. auto industry, which is so large and has such a pervasive effect on so many suppliers, appears to be fully committed to this change and is making good progress. The entire trend inspires optimism about the U.S. economy in the future. It is an American trait that we rest on our laurels, but once we have been challenged, we get our act together and rise to the occasion. If all segments of U.S. industry decide to compete with the Japanese, we can be very bullish about U.S. competitiveness in the late 1980s and 1990s. ■

(Vaughn L. Beals has been Chairman and Chief Executive Officer of Harley-Davidson Motor Company, Inc. since 1981. He headed the team that bought Harley-Davidson from AMF and restored the company to private ownership.)

SATURN:
AN EXPERIMENT IN PEOPLE MANAGEMENT

William E. Hoglund

(The following article is revised from Mr. Hoglund's address to the Governor's Conference on Economic and Community Development at the Opryland Hotel in Nashville in November, 1985, when he was president of Saturn Corporation.)

In the past, the adversarial relationship between management and labor has been the greatest single obstacle preventing consistently high quality and productivity in industry.

None of the new technology – robots, computers, machine intelligence – is going to make much difference without the most vital factor in our success strategy – people.

More than anything else, Saturn is an experiment in people management – in total participation, contribution, and commitment of every person involved: every Saturn manager, machine operator, skilled tradesperson, secretary, and maintenance person is going to be a decisionmaker.

Saturn is based on the principle that we are all in the same boat, and we had all better row in the same direction. We believe that all people want to be involved in decisions that affect them and want to share in the success of their efforts.

Hoglund

The Union is our partner in this undertaking. The United Auto Workers is a stakeholder in Saturn and participates in decisions. A UAW advisor is on the Saturn management staff and is a part of all enterprises, including the recruitment and selection of our employees. Our Saturn-UAW Agreement, a model for all industry, is a genuine living document with no fixed seniority standards, work rules, or practices. Status is out. It gets in the way of genuine cooperation. Saturn will have no posh offices, no preferential parking or executive dining room. There will be no traditional job descriptions or differentiation between hourly and salaried employees; no time clocks.

The Team Philosophy

Everyone will work in self-directed teams of five to twenty people. The teams will be responsible for 100-percent quality at each stage.

At Saturn, we will not have a single quality manager – we will have 6,000. Our work teams are going to do it all – seek resources, keep records, communicate and work with supplier partners. Zeroing in on and pleasing the decisionmaker is going to be different, because every one of our people will be making decisions.

Since we consider Saturn people to be a fixed asset, we are investing heavily in education and training, giving our people every possible guarantee of job security. With genuine job security, our employees need no longer fear new technology or process efficiencies. In fact, they can not only welcome productivity improvements as a means of achieving even greater job security, but can consider it a major factor in defining and implementing such improvements. We want to build trust – to allow each person to make mistakes without the fear of reprisal. We believe that the achievement of quality is going to take the creative contribution of every person, and creativity is nonexistent when an employee fears for his job or thinks he has to bury his mistakes. Risk-taking is what free enterprise is all about. So are rewards, if the risks turn out right. Therefore, rewards are very much a part of the Saturn philosophy.

None of the new technology – robots, computers, machine intelligence – is going to make much difference without the most vital factor in our success strategy – people. Everyone involved is going to be a decisionmaker.

Our employees will receive 80 percent of the straight-time wages of domestic auto manufacturers. The remainder of their incomes will depend on meeting performance goals and achieving quality and productivity targets. Profit-sharing will be part of the incentive. Giving employees a stake in Saturn's outcome is central to our effort. We are even working on ways to extend this practice to our supplier partners – so they, too, stand to gain if we do well, and stand to lose if we lose.

In a recent visit to General Motors, President Reagan, the only President who is also a lifetime union member and six-time President of his union, saw what Saturn was doing and said: "I was going to come here and suggest . . . urge . . . you to be bold. But I find that you have been bolder than even I was going to suggest."

That philosophy is also reflected in the attitude of the workers. One of our new Saturn employees, a welder from Flint, best summarized this boldness: "Our opportunity of a lifetime is here – and I truly fear that if we do not reach, if we do not do this right this time, we will never pass this way again."

The stakes are enormous, not just for Saturn, but for the continued success of GM. It could also possibly be a test for the success of American manufacturing in world competition. No company, no matter how big, is immune. No one wants to see GM – and the U.S. economy – sink, and I believe we can outdo our world competitors – in quality, *and* in cost. In some instances, we already have. GM for example, now produces and exports a wide range of parts and components to Japanese automakers. Also, Honda cars and Nissan trucks built in America have higher quality ratings than the same vehicles built in Japan. The difference is the American worker: the most educated, talented, independent, and resourceful worker in the world. Saturn will succeed because of our people. We hope to prove that Americans, if given dignity, trust, and respect, have limitless capabilities – enough to offset any competition from abroad.

(William E. Hoglund is currently group executive in charge of the Buick – Oldsmobile-Cadillac Group, a GM vice-president, and a member of the Administrative Committee.)

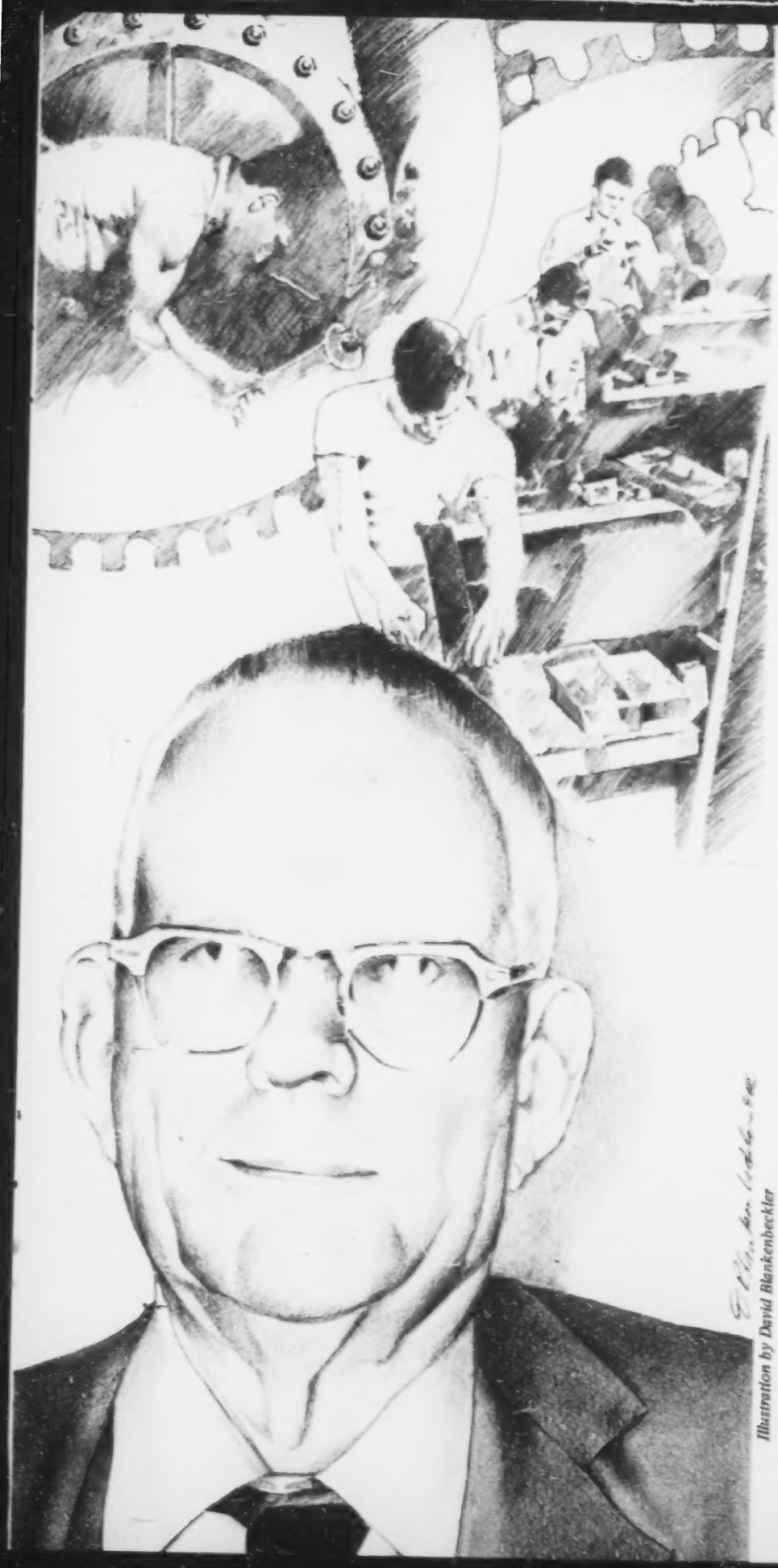


Illustration by David Blankenbeckler

DEMING AND THE 14 POINTS:
A PERSONAL VIEW

Gipsie B. Ranney

Although the Deming Prize for Application has been awarded in Japan since 1951, W. Edwards Deming's accomplishments were largely unrecognized by the business community in this country until 1980. The Deming Prize, established in commemoration of Deming's contributions to Japanese industry, is awarded to "the corporations or plants which have attained recommendable results in the practice of quality control."[1]

American industry is now painfully aware of the presence of former winners in our marketplace, some of whom were Fuji Iron & Steel (1951), Fuji Photo Film (1956), Mitsubishi Electric (1956), Matsushita Electronic (1958), and Nissan Motor (1960). The 1980 airing of the NBC White Paper, "If Japan Can, Why Can't We?" alerted American management to Deming's work. Since that time, U.S. executives have become interested in learning what Deming taught the Japanese. The answer is summed up in Deming's Fourteen Points for Top Management.

Deming's Fourteen Points

In short, Deming's points are an all-encompassing set of principles by which to guide business practice when the intent is to be competitive today *and* in the future. Deming has been in the process of formulating the Fourteen Points throughout his years of practice as a consultant in the U.S. and abroad. The Fourteen Points are still in an evolutionary state, changing as Deming continues to practice. They have been based upon his observation of business practice from the viewpoint of a statistician and a scientist (he received a Ph.D. degree in physics at Yale in

1928). That viewpoint has allowed him to see more clearly than others the illogic and expediency which often govern business strategy and practice. As Deming says, much decisionmaking is geared toward maximizing the price of the company's stock and being able to pay the quarterly dividend, in spite of the fact that achieving these objectives may result in failure to invest in plant, equipment, and people to enhance future competitive position. Expediency cannot govern the decision-making of an organization if it expects to survive the competitive attack it will face almost surely at some time in its life.

During the past several years, managers have struggled to try to put Deming's ideas into practice. Executives say they are going to "install" the Fourteen Points, as if they were going to buy a machine today and tomorrow it will be producing parts. Achieving even a partial understanding of the operational meaning of the Fourteen Points requires years of effort, and putting them into practice takes longer. There is still probably not one U.S. company which is, indeed, practicing the Fourteen Points in their entirety, although some have made progress.

Ranney

In an age of expected instant gratification, we are predisposed against being able to practice even the first of the Fourteen: **Create constancy of purpose toward improvement of product and service, with a plan to become competitive and to stay in business**. Some managers think they can work on quality and productivity on an intermittent basis. They organize a quality meeting to take place every Friday morning. They talk about improving quality on Friday morning and go about business as usual the rest of the week. True practice of continuous effort to improve the system of manufacturing and service requires internalizing the principles set forth by Deming. Every decision is then examined in light of the Fourteen Points for its potential to improve the system or further corrupt its ability to perform. **Point 14: Create a structure in top management that will push every day on the other 13 points**. The salient words are "every day."

Many attempts to implement the Fourteen Points seem to consist of taking actions to impose selected portions on the existing operating policies and strategies of the organization, rather than changing those policies to be consistent with Deming's principles. David Chambers, a widely recognized management consultant, says he has been told by executives that they cannot practice all fourteen, and ask him to give directions on which two or three they should do. Such an approach is exemplified by companies that institute mass training in statistical methods for their workforce and do nothing to capitalize on the education their people receive. The work force becomes excited by new potentials to identify and solve problems, makes recommendations for ways to improve, and suffers disappointment and frustration when recommendations go unheeded. No statistical training should take place until management has taken steps to use the benefits of that training effectively. Management should also take steps to understand statistical concepts themselves. They should alter operating policies of equipment and raw material purchasing, maintenance, engineering, marketing, accounting, and finance which could serve as barriers to implementing recommendations based on intelligent use of facts. The Fourteen Points are an interrelated set of principles. Failure to adhere to one may render all other efforts ineffective.

One can walk through American plants and see equipment imported from Japan and Europe. Yet manufacturers admonish the consumer to "buy American" for the sake of keeping American jobs.

Facing the Competition

Managing for enhancement of competitive position requires recognition that the marketplace has changed. **Point 2: Adopt the new philosophy. We are in a new economic age. We can no longer live with commonly accepted levels of delays, mistakes, defective materials, and defective workmanship**. Deming states that our phenomenal economic success from 1950 until 1968 was not a result of good management practice, but was due primarily to the fact that the rest of the world was devastated by World War II. Pent-up demand and no serious competition resulted in the ability to sell just about anything, regardless of price and quality. More recently, the marketplace has changed. Higher quality products than those previously seen has raised customer expectations. Some of the manufacturers who have been most affected by foreign competition and have worked most diligently to get protectionist legislation through Congress have done themselves what they are seeking to prevent the American consumer from doing. One can walk through their manufacturing plants and see equipment imported from Japan and Europe. Yet they admonish the consumer to "Buy American" for the sake of keeping American jobs. Do they expect the American consumer to behave any differently than they do? They attempt to blame foreign competition and the American consumer for unemployment. Deming states that unemployment is a symptom of bad management – the market has been lost to the competition.

Quality "assurance" has been practiced in the U.S. for more than four decades. One wonders how so many consumers could have had bad experiences with products if quality has been assured. The term assurance implies passive, after-the-fact activity. The practice of quality assurance has amounted to (faulty) inspection of a product *after* it is already made with defects built in, if not designed in. "Assuring" quality by depending upon screening a product already made or correcting a service already performed is, by its nature, anti-productive. **Point 3: Cease dependence on mass inspection.**

Finding and removing the causes of defects and problems *before* they occur leads to an increase in productivity. Managers who are working seriously to improve productivity recognize the enormous amount of rework and repair which goes on in the workplace. Often we do not recognize the fact that we are engaged in rework. How often are customers billed incorrectly? How often are orders misprocessed or sent to the wrong location? How often are reservations lost? Data on engineering design changes made after going into production of a new product indicate that the number of rework changes in the U.S. is staggering. Some airlines have a regularly scheduled delivery service for lost luggage to compensate for faults in the baggage handling system.

Striving for Improvement

Time-honored operating policies can serve as barriers to improvement. An example is the purchasing policy of buying from the low bidder without consideration of the performance history of suppliers. Purchase according to price tag, without regard to total cost of use, may imply that internal users of products spend nonproductive time screening incoming products, replacing failed items after they have been placed into assemblies, adjusting processes to accommodate variation in incoming materials, and experiencing down-time while equipment ruined by defective incoming materials is repaired. **Point 4: End the practice of awarding business on the basis of price tag alone.**

Opportunities for improvement are revealed by recognizing internal customer-supplier relationships. Every work activity constitutes the action of a supplier to provide his customer with a physical entity or a piece of information which is acted on again and passed to the next customer. Identifying the end result of an action as a product facilitates the ability to identify the customer, recognize his needs, and act toward better serving those needs. For example, the customer-supplier relationship of a purchasing agent with internal users of products goes unrecognized. In some organizations, the purchasing agent reports to manager A, while the user of the product reports to manager B. The purchasing agent is not responsible to the customer who is the ultimate user of the delivered goods. Furthermore, the purchasing agent is not provided with factual information from the user about the performance of the incoming product in use.

According to Deming's philosophy, the role of a manager should be that of a coach, not a judge.

Personnel involved in administrative and service functions often fail to recognize that their activities are repetitive and can be studied in the same ways as a manufacturing process. A purchasing agent orders different items on a day-to-day basis, but he repeatedly performs the same function. If there were no commonality of activity, then he could develop no skill or experience. Failing to recognize commonality of activity serves as a barrier in identifying and removing causes of poor performance.

Organizational structures which foster territorial behavior, evaluation and reward systems (based on short-term evaluations of individual performance rather than on teamwork), and compartmentalized accounting often foster adversarial relationships and internal competition, which in turn act as barriers to improvement and sources of inefficiency. **Point 9: Break down barriers between departments.**

Fixing symptoms rather than root causes is a repetitive kind of activity which managers can become comfortable doing. The same band-aid can be applied repeatedly to the same kind of symptom. **Point 5: Find problems and fix them.**

Increasing Productivity

Some executives appear to believe that improved productivity will come exclusively from issuing decrees that there will henceforth be total "conformance to spec." They take no action to review and change the operating policies which have prevented their work force from being able to produce good products. **Point 10: Eliminate numerical goals, posters, and slogans. Do not ask for new levels of productivity without providing methods.** Doing what they perceive is expected, the work force launches into a program to prevent nonconforming products from reaching the marketplace. As a result, process adjustment which often increases, rather than reduces product variation, is done more frequently. Furthermore, more elaborate programs for screening products already made are implemented, and little or no real improvement in quality or efficiency results. The next event to occur is assignment of blame for poor performance. The manager sits in judgment of his people. Deming says "the role of a manager should be as a coach, not a judge." The role of a manager is to practice leadership. He should search for ways to clarify the job he expects his personnel to do and provide them with the necessary training and tools. **Points 6, 12 and 13: Institute modern methods of training on the job. Remove barriers that stand between the hourly worker and his right to pride of workmanship. Institute a vigorous program of education and training.**

Deming has laid out a guide for systems improvement which could, if acted upon effectively by management, result in remarkable gains in the marketplace. The necessary ingredients in implementing his principles are the will and the discipline to do so. No individual is more sincerely interested in this country's regaining its former industrial and economic position than Deming, and no individual has done more to provide guiding principles with which to accomplish that aim. ■

1. Koyanagi, Kenichi, **The Deming Prize**. Tokyo: The Union of Japanese Scientists and Engineers, 1960.

(Gipsie B. Ranney, Associate Professor of Statistics at the University of Tennessee, Knoxville, is a founder of the Institute for Productivity Through Quality and a consultant to industry.)

Organizations of Change

G. Harlan Carothers, Jr.

The intention to improve seems to be the main reason for the new interest of industrial firms in quality and productivity. However, improvement requires change. Kurt Lewin (1947) saw change as a three-step process: unfreezing, movement, and refreezing. Though Lewin's steps appear clear, concise, and easily understood, their implementation can be quite complex.

The Complexity of Change

Part of the complexity comes from what Von Bertallanfy (1956) identified as the interdependent, and therefore highly interactive, characteristic of human social systems. He suggested that instances of change involving humans should not be thought of as singular events. Rather, they are to be viewed as the initiation of a series of interactive and linked outcomes. Therefore, any change will have primary, as well as secondary effects.

Carothers

The implementation of Lewin's steps, coupled with the complexity of interdependency, is more than enough to perplex organizations that are intent upon change. Unfortunately, there is a third consideration that has arisen in the last three decades: the rate of change required to remain competitive has increased dramatically. As a result, time is more precious. Rate of improvement per unit of time must be enhanced. The pace of change must quicken. For those who do not improve, there may be no profit, no revenue, no sales, no business, no future, and eventually – no firm. Some organizations cannot afford the time to progress slowly and methodically through Lewin's steps. For many, what is required is an organization that inherently changes.

Using three generally accepted personnel strata of organizations and their respective roles and responsibilities, we intend to illustrate how one might construct an industrial organization with inherent change. The three strata are labeled: (1) senior management, (2) middle management, and (3) nonmanagement employees. Senior management includes CEOs, presidents, vice-presidents of strategic business units, etc. Middle management is made up of general managers, functional middle managers, and first-line supervisors. Nonmanagement employees are all those who do not supervise others. Individual firms may have different titles or partitions of responsibility, but these three general groupings will suffice for this construction.

Senior managers should prize and reward constructive risk and entrepreneurship as the essence of their organizational development. Management should respond to employee-initiated development plans.

It is recognized that personnel in these three groups have different roles and responsibilities which provide the bases for prescribing new adaptations to better fit the competitive climate.

Senior Management

The Senior management group is usually accorded the role and responsibility for: (1) formulation of mission statement; (2) policy formulation; (3) strategic planning; (4) organizational provisioning; (5) structure of the organization; (6) development of the organization; and (7) performance analysis and evaluation. Once the principle roles and responsibilities are identified, it is possible to describe the contribution these personnel could make to an organization whose intent is to constructively and continuously change.

It would be the role of senior managers to accomplish the following:

- construct mission statements which clearly and unambiguously require the firm to be a competitive leader in its industry. Without decisive statements of purpose, it is easy for the organizational personnel to rationalize poor behavior and performance.
- formulate and write policy which necessitates demonstrable continuous performance improvement.
- eliminate ambiguity in goals, goal setting, performance assessment, and reward criteria.
- require strategic plans to address rate of improvement in performance at all functional levels of organization. Such requirements would enhance the likelihood of the success of present plans, as well as provide the impetus for future strategic aspirations.
- provision the organization based upon facts of performance assessment. Senior managers could require quantitative confirmation of the improvement resulting from the new provision. This might stop the seemingly mindless acquisition of new capital equipment which subsequently makes little contribution to improvement.
- structure organization to reduce resistance to change. Only organiza-

tional forms which are inherently adaptive would be encouraged. Organizational form should lead, rather than follow organizational performance in the marketplace.

- prize and reward constructive risk and entrepreneurship as the essence of organizational development. Demonstration of personnel initiative and individual employee self-development would be required. The managerial group should respond to the employee-initiated personal development plans. Such development could be viewed as a cost incurred as an investment in the organizational future.
- balance their examination of strategic outcomes with a critical assessment of the true change in operating performance. Operating performance would go beyond the financial performance, requiring the critical inspection of the ways and means producing the results. The appropriate question to be asked should be: At what rate is improvement taking place in the ways and means?

Middle Management

The roles and responsibilities of Middle Management overlap those of the seniors to some degree. This group also makes strategic plans which are then developed and presented for review and endorsement by the seniors. However, the middle group's principal responsibility is to execute the strategy within the constraints defined by the senior staff. Middle managers are therefore responsible for a number of obligations: (1) the formulation and administration of procedures and practices; (2) the assurance that operational goals are consistent with strategic objectives; (3) the definition of subordinate objectives; (4) the assignment of tasks; (5) the provision of feedback to subordinates; (6) the administration of rewards, compensation, and criticism, (7) the development of personnel; (8) the insurance of appropriate performance to accomplish strategic objectives; and (9) the insurance of improvement of employee performance.

Middle Management Adaptations:

This middle group, a crucial link in the organization, bears the responsibility for interpreting and transmitting the strategy to the action groups and deciding how to accomplish the goals.

It would be the role of middle management to accomplish the following:

- insure that the strategic objectives are tied directly to unit goals and task definitions.
- require subordinates to demonstrate the consistency of organizational goals with strategic objectives.
- administer reward and compensation based upon demonstrable improvement in performance. Compensation disoursement could clearly differentiate between significant performance contributors and those not contributing to improvement.
- view performance deficiencies, initially, as a reflection of managerial systems shortcomings. Employee criticism might only follow managerial coaching.
- view turnover of personnel on task assignments as a managerial issue until proven otherwise.
- expect that personnel development will be a critical criteria for managerial promotion.
- evaluate their own competence to provide performance feedback to employees.
- recognize and be accountable for making demonstrable constructive difference in performance, rather than maintaining the status quo.
- evaluate their own ability to provision their employees in order to make continuous improvement possible.
- to earn rewards and recognition based upon present performance and improvement as the foundation for the organization's future.

Nonmanagement Employees

The roles and responsibilities of nonmanagement employees overlap those of the middle managers. Whereas senior and middle management decides what is to be done, middle management and nonmanagement determine how to go about getting it done. The nonmanagers are primarily responsible for maximizing performance outcomes in both quantity and quality. They must accomplish this end while living within the system constraints and resources provided by management.

It would be the role of nonmanagement to accomplish the following:

- accept responsibility for the present level of performance.
- accept the opportunity and be willing to assist in the improvement of the work unit's performance.
- participate wholeheartedly in organizational structures like Quality Circles, Quality of Work Life groups, Autonomous Work groups and Semi-Autonomous Work groups. These structures could be viewed as a means to increase not only their own involvement in the organization, but to assist in assurance of job performance improvement.
- seek ways in which to demonstrate self-sufficiency, self-report, and self-correction.
- view change and improvement as the fundamental way to preserve their jobs, their units, and their firms.

Summary

In setting goals for improvement in quality and productivity, all personnel can assist in the reconstruction of an organizational philosophy and set of systems which clearly requires all individuals, regardless of level, to contribute to the constructive improvement of the firm. These contributions should be simultaneously orchestrated. If the three primary groups do not move collectively, the total effort will be halfhearted and change will be difficult.

Although some companies will prefer to implement deliberately slow and cautious change, the most courageous will see this reconstruction proposal as an organizational model shift that might well become a blueprint for exemplary firms of the future. ■

(G. Harlan Carothers, Jr. is currently a management consultant to private industry and government agencies. Until July, 1984, he was the Corporate Vice-President of Productivity for the Harris Corporation, responsible for the coordination, communications and assistance to the 30 worldwide divisions of the Corporation for Productivity Programs.)

WEBSTER CITY PRODUCTS: Evolution of a Program

John P. Patrou

The statistical process control program at Webster City Products Company began after I heard a speech by William J. Harahan, Director of Manufacturing Planning for the Ford Motor Company. Mr. Harahan's subject was "Ford's Perspective of the Japanese Challenge."

As Mr. Harahan spoke, I began to see parallels between our own philosophies of manufacturing and Ford's – the philosophies which he described as being inferior to those used by the Japanese.

After I presented Mr. Harahan's suggestions to my staff, they approved the program. I then requested a quality control group. Established in the fall of 1982, the department consists of a manager; a quality engineer, responsible for inspection procedures, gauge evaluation and vendor evaluations; and a quality technician, responsible for the development of statistical evaluation and control programs through training within our company, and for working with suppliers and customers in improving their understanding of these programs. The entire department has attended the University of Tennessee's Institute of Productivity Through Quality.

Patrou

Webster City Products Company, a division of White Consolidated Industries, Inc., is a part of W.C.I.'s Domestics Consumer Products Group, which is made up of Frigidaire, White-Westinghouse, Kelvinator and Gibson Appliance Sales Companies, and eight appliance manufacturing divisions. The major factory and executive offices are located in Webster City, Iowa, with 1000 employees and annual revenue of $150 million.

Although the Quality Assurance Department provides leadership and training to all areas of the company, the change is being organized by my staff, which has analyzed the use of statistics within the company. We have established a philosophy which results in a less costly product, and allows for more competitive pricing, but with more customer satisfaction as a result of improved service rates.

These statistical techniques have made it possible for us to better determine the capability of our processes and machinery, thus giving management the opportunity to learn to control the processes and improve them. The methods allow us to set quality standards for purchasing new equipment and parts, as well as allow factory operators to control the quality of the parts in machining operations through the use of control charts. Statistical Process Control (SPC) has improved communication between workers on our factory floors and all levels of management, and has also provided a better method for problem solving and significant improvement in our processes.

Some results of our improved quality and efficiency include the following:

1. The Jefferson Plant was selected as the source for transmissions for another W.C.I. laundry plant.
2. Webster City Products Company was the successful bidder for the manufacturing of the Frigidaire laundry line, W.C.I.'s premiere brand.
3. We have obtained the monies for major capital expenditures to continue to improve our facilities.
4. We have produced lower cost items in which unit product quality sales, and overall profits have improved.

These improvements have had a positive effect on our company, while proving to be highly successful and profitable, due largely to the efforts of all the people in the company. The employees are successfully using statistical control charts on their machining operations, while management is successfully determining the capability of all the processes, as well as improving them.

Concerning actual production, procedures are much more efficient now, and matters such as equipment replacement are expedited, whereas in the past they were delayed or even overlooked. Quality was not as well defined and therefore was not given proper priority.

This program has provided everyone in our organization a very effective tool in communication, as well as a tool for improving and controlling our quality. The program includes full participation of all salaried personnel in one or more of these areas: quality circles, task teams, and quality improvement teams.

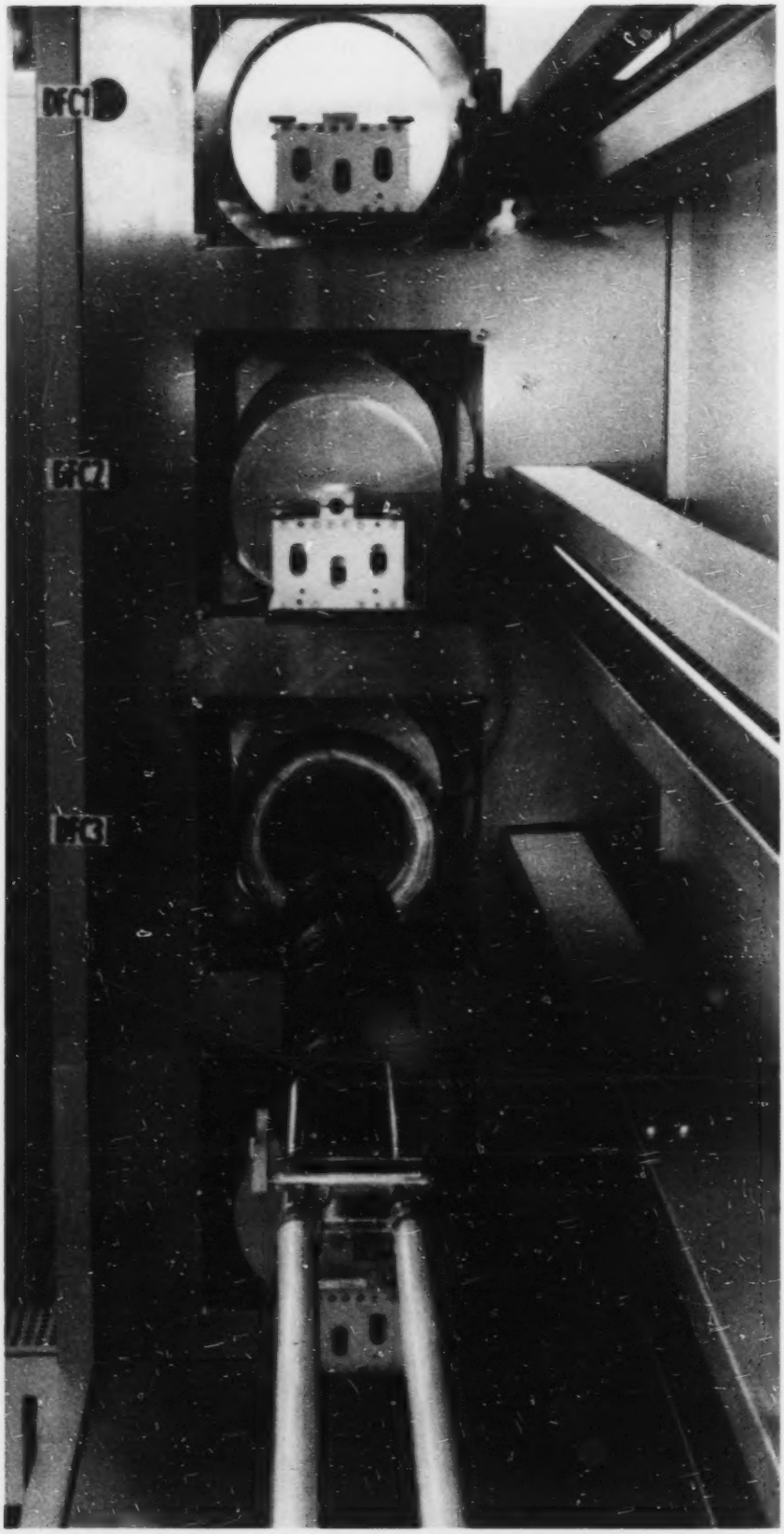
Our hourly personnel participate in quality circles and task teams. The quality circles and task teams use the various SPC techniques of control charts, pareto charts, fishbone diagrams, capability studies, and the more intricate techniques for complex problem solving and design of experiments.

The survival of this division was once in question. Today, we have the major market share in compact laundry (once 8 percent) and have tripled our total laundry market share (once less than 3 percent).

The survival of this division was once in question. At one time, this division's laundry market share was less than 8 percent in compact laundry and less than 3 percent in total laundry products. Today, we have the major market share in compact laundry and have tripled our total laundry market share.

We have reached only the first plateau. The rest of our expectations will be reached when *every* employee not only uses these techniques to improve every process of our business, but begins to *think* in statistical terms in all aspects of his work. ■

(John P. Patrou has been president of Webster City Products since 1978. The company, which manufactures private brand home laundry products for the U.S. market, is a division of White Consolidated Industries, Inc., of Cleveland, Ohio.)



MANAGING THE PROCESS: Introducing SPC

Jeffrey D. Peters
William C. Parr

One of the most perplexing dilemmas managers face today is not only how to introduce the methods of SPC (Statistical Process Control) and other modern quality technologies into their companies, but also how to manage the technology introduction process in a way to achieve the desired return on the investment of time and effort.

Many executives have participated in various training programs concerned with the quality technologies – SPC and DOX (Design of Experiments). Others have funded the participation in such courses of one or more people in their organizations. However, the hoped-for results simply are not occurring in the organization

One quick explanation for this lack of improvement quality is that perhaps the programs were mere snake oil, of the variety advertised every year and trumpeted by bestsellers claiming to reveal the "hidden secrets of management," applicable in every specific context, with no customization, learning, or adaptation necessary to make the ideas fit the needs of the corporation.

Another possibility is that perhaps what was taught/learned in the course was only the quality technology *itself*, and not the art of successfully implementing this technology into a corporation.

The Art of SPC

The subject of this article is the art, which is almost completely neglected in the courses on SPC, but absolutely

essential. As all managers know, simply having the right technology is never a sufficient condition for success. Some managers, and even some consultants, would disagree on this matter, and in a later section entitled, "Raving Technologists," we will discuss their views and the failings of their ideas.

It is necessary to take the knowledge of the techniques of SPC, DOX, and other suitable quality technologies now in the hands of a few, and put them to use in the organization. It never has been and never will be sufficient to deliver the needed tools to only a few selected "gurus" who will then carry out the applications. The idea that only a few people (the statisticians, the quality department) can be put in charge of using SPC and successfully implement the process is one of the most pernicious errors possible. To attempt to implement the ideas of SPC in this fashion is to guarantee failure.

It should be recognized that this "guru philosophy" is, although initially appealing, a mistake. The techniques involve substantial new ways of thinking and new ways of distinguishing between acceptable and unacceptable behavior by those in the organization. As a result, it will be necessary to widely disseminate the philosophy regarding these techniques and technical facts in order to ensure that they are properly and widely used.

Peters

The techniques are often new to the organization, and come with a language of their own – terms such as process capability, "in control," rolling range, z-score, standardization, and control limits. Many of these terms suggest (sometimes deceptively) common reference points in the experience of the corporation, but most do not. The problems involved in introducing an alien technology are quite formidable. It is not sufficient just to train everybody.

At Harris Semiconductor we have learned that the required technical training component is often much easier than the philosophical part of the transformation – changing the incentive system so as to motivate managers and their subordinates to use the techniques to profit, and focussing the eyes of the organization on continuous improvement instead of on maintenance of an apparently quite adequate status quo.

Possible Routes to Progress

Many consultants have suggested that there is no problem – that by some date in the future, all successful companies will be practitioners of modern quality technology. They typically envision one of several scenarios:

1. **Management change by attrition** (MCBA). The scenario here is that modern managers will arise who will embrace the new ideas. Advocates of this process suggest this is merely the natural working of evolution. Successful managers will use the techniques, achieve great successes, and eventually be promoted. Some modern consultants who take a dimmer view of matters might amend the name to Management Change by Assassination. Alternatively, those companies which steadfastly refuse to face the future will die out.

2. **CEO conversion**. In this scenario, the CEO becomes persuaded of the utility of the new technologies and adopts a "bet-the-company" approach. The idea is that the entire company will be trained, and then transformed.

It has never been sufficient to deliver the needed tools to only a few "gurus." It is necessary to widely disseminate the philosophy regarding these technical facts to ensure they are widely used.

Both scenarios present problems. Frankly, the first scenario is too slow. Its only hope relies on a change in the management team, and does not indicate why the new managers will be more inclined than their predecessors to adopt the new ideas.

The second scenario is perhaps even more farfetched. Companies are constantly beseiged with new management fads which compete for attention, each claiming to be the one true path to financial success. To say the least, it is very difficult to bet one's corporate future on a technology which is largely untried in the company. This method has in fact been successful only rarely. Typically, when the corporation is faced with such a massive external threat, survival without drastic change appears unlikely.

However, the second scenario is certainly not without examples of success. Japan, as a result of World War II was completely devastated, both economically and physically. In the midst of destruction, this country embraced the new technology and is now an example to the world of what quality control and good management processes can do.

It must be recognized that this second scenario has seldom been successful in less threatening circumstances. Among other things, it demands one of two things from the CEO. Either he must take a leap in the dark, sending his company on a path with a new or little understood technology, leading to a perhaps ill-defined destination, or alternatively, the CEO must spend a substantial amount of time obtaining a solid understanding of the technical issues in quality technology prior to making the decisions. This option leads to an educated leap, with guidance being provided by the CEO's insight.

Parr

However, there can be difficulties for the educated CEO. There are many "salesmen" and consultants vending their wares, all of which are advertised as "just the right thing for improving matters." The amount of insight required to carefully distinguish the fakirs who may provide a degree of short-term assistance, from consultants who can be more helpful in the long run can be considerable. In a later section, "identifying marks" for distinguishing the fakirs from the more useful consultants are provided.

3. **Using classical management concepts**. Using the accepted, classical

management concepts is a path that proceeds via the top management sponsorship of champions. In this scenario, management does not "bet the company" on the new ideas, but instead carefully selects one or two "champions" who have been successful managers to introduce the technology in their areas of responsibility.

As a result, these champions will have the blessing and assistance of top management and will therefore act in conformance with existing defined corporate goals. Additionally, these managers will be decorated as "heroes," having successfully introduced the new ideas. As a result of the learning process involved in the implementation, it will eventually become easier to introduce the technology throughout the corporation. "Heroes" who are looked up to will be identified with the modern technologies and success stories from inside the corporation, which will motivate other future champions. The learning process, with management sponsorship, can more easily be transferred to others in the corporation than can the "canned" programs offered by outsiders.

However, even these defined champions will need help. They are being asked to become advocates of technologies outside of their fields of expertise. This poses the dilemma of finding consultants who *can* be helpful in this process and provide expertise to create and nurture the champions.

The selection of the champions needs no outside assistance. They should be respected managers who have in the past been successful at **managing change** inside their domains of responsibility. It is important to note that the ideal champions are those who have been successful at **managing change**, and **trying new ideas. They are not just those who "stay within the budget" or "give us good production numbers."** Sometimes those who are most successful at holding the line on expenses or on getting good short-term numbers are doing this at the expense of the long-term health and viability of the company – at the expense of quality, maintaining a technological edge, and customer satisfaction.

Classification of Consultants

The selection of the consultant, however, is a complex matter, much more so than the selection of "champions." Some relevant guidelines exist which can be helpful in selecting the proper consultant. We present these categories in terms of a series of three questions which should be asked about any consultant's offerings. Based on our experiences at Harris Semiconductor, we believe that each of the various types of consultants has provided some discernible benefits. However, some types have led to greater, more enduring improvements.

1. **Is the consultant selling a preprogrammed route, guaranteed to lead you to Nirvana?** Many consultants fall into this category. They have a "plan" for quality improvement, expanded in surprising detail, which they know to be just perfect for your corporation. Since they often know little or nothing about the specifics of your industry, such claims are the first indications that their solutions can be only partial ones. The programs suggested by this type of consultant are often quite simple to understand, and easy to digest. Their advocates are often book authors, who claim to be able to predict the exact course through which the corporation will travel on the route to improvement.

When consultants who sell "maps" show the route to improvement, either their maps are "good maps" which tell how other companies have succeeded, or they are bad maps. In the case of bad maps, we face fundamental problems once we have bought them.

It is very difficult to repudiate the map and change course once it has been accepted and sold to the troops. Thus, the more the company learns, and the more the map is modified based on company resources and goals, the harder it becomes to veer from the course dictated by the map.

In addition, almost any of the major existing "maps" carry some kernels of basic truth. As a result, some benefits will be achieved as a result of their adoption. This is particularly the case in situations where quality/productivity is not perceived to be a problem by those in managerial positions. In such cases, almost any of the available maps will lead to an increase in the awareness of some of the existing problems, and some resulting improvement. The result is that it becomes increasingly more difficult to throw away the map. Anyone who has purchased software for his corporation, and then found that the software did not really meet the long-term need, is acutely aware of how difficult it is to change course once a "map" has been installed.

Furthermore, the purchaser of "maps" ultimately limits his achievements by placing himself in the role of a follower. The best that the buyer of maps can hope for is to buy a relatively good map. Inherently, it is impossible to lead by following.

Instead of buying maps, corporations need to *learn* the skill of mapmaking. Consultants selling maps, instead of teaching us how to navigate, are ultimately misguided. We have seen such map sellers at Harris Semiconductor. It would be wrong to assume that these consultants can be of no assistance. In fact, sometimes the *quickest visible benefits* will be obtained from interaction with such consultants. It is our experience that increases in productivity do not continue to accelerate if one follows the advice of the "map-sellers." Instead, we limit our achievement by the vision of the mapseller, and find that, after initially encouraging results, we reach a point beyond which further improvement efforts are no longer cost-effective. As a result, the organization does not learn how to make maps, and blaze new trails, but instead knows only how to follow maps, and walk along well-defined trails.

2. **Does the consultant stress the importance of management's incentive systems and top management leadership?** We have classified a second set of consultants, who are of limited utility, as "raving technologists." These consultants come to us with plug-compatible hardware or neat software packages to accomplish the task. While

talking incessantly of statistical techniques, these raving technologists discuss management issues only when hard-pressed. Their devotion is not to the transformation of companies through modern statistical quality technologies – it is to the technology itself.

The raving technologists sometimes possess quite impressive technical credentials in statistics. However, their management experience is often severely limited, and they have difficulty speaking any language other than statistics or computerese.

Ultimately, these people are of little help. They do not understand any better than the manager how to implement the new technologies – they have only the capability of proving theorems about the technologies! The raving technologist is usually a poor choice as a consultant.

3. **Does the consultant stress the importance of substantive technologies such as SPC and DOX?** Although the raving technologist pictured above is a poor assistant, his technologies are necessary. Some consultants will arrive and neglect these technologies. They will discuss elaborate management systems (often entailing a complete change in the manner in which a business is managed) which they claim will be sufficient in themselves to produce the desired increases in quality and productivity.

The unfortunate truth is that, in the absence of tools, the job cannot be done. No degree of organization, management commitment, and employee motivation will suffice to produce the desired improvements in the absence of statistical quality technology. All the motivation in the world, and all of the available organizational charts and PERT diagrams, MRP, and MBO, will not work if the technical ability is absent.

A simple principle summarizes the limitations of these three categories of consultants: "Every complex problem has at least one simple, wrong solution." We label the advocates of these simple, wrong solutions "sizzle sellers." These three types of consultants sell large quantities of sizzle, but never deliver the steak.

There is, however, another class of consultants which emphasizes "continuous improvement." We have learned at Harris Semiconductor that improvement does not come instantaneously, but as a result of sustained and continued effort. Furthermore, these achieved gains will be retained by the long-term use of modern statistical technology. This type of consultant will insist on a balanced use of all the classical management tools: incentive for desirable behavior, the creation and rewarding of champions, as well as the new (and some not-so-new) quality technologies which must be introduced and exploited.

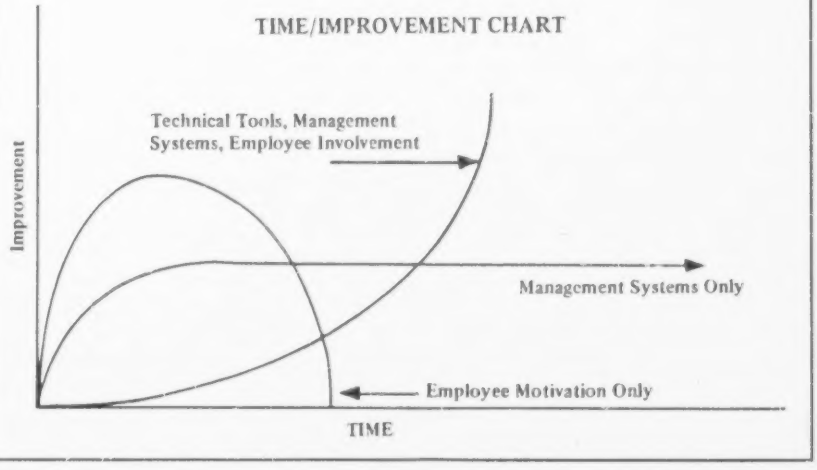
The ideal consultant will not propose a one true route to follow. Instead, he offers to work together with the company in setting up a system which stresses continuous improvement. (See Figure 1.) Such a consultant will not mind getting dirty hands, learning about your technological problems and helping to solve them alongside the "champions." Finally, this consultant will not concentrate solely on the quality technologies such as SPC, but will also stress the need for definition and visible sponsorship of these defined champions and their activities.

In summary, the consultant who can be helpful will stress several needs:

- The need to deliver the tools (statistical quality technology) to the entire organization, not just a small clique, so that the tools can be used efficiently.
- The need to declare to management that they will be measured on continuous improvement – that they will be rewarded not for "being good," but for "getting better."
- The need for top management to sell these technologies, by speaking the language of these technologies, and by expecting those reporting to them to speak that language.
- The need for SPC or other statistical quality technologies to be driven into the reporting structure. These cannot be perceived as "this year's hot program," likely to be dropped with the adoption of the next year's business plan. One suggestion is to designate a portion of each employee's annual review showing how he is contributing to the continuous improvement process through use of statistical quality technology. Another extremely powerful tool involves measuring "continuous improvement" as a component of management's performance. Managers who are tasked with continuous improvement are most receptive to new statistical technologies and

FIGURE 1

TIME/IMPROVEMENT CHART



management methods which are appropriate to achieving that goal!

- The need to face the issue of continuous improvement, which can be achieved only via proper use of the proper tools. The desire to improve continuously must be instilled by management in every individual in the organization.

- The need for management to create an environment favorable for the use of the statistical quality technologies. Creation of this environment involves training, providing employees with time to work on improvement projects, and rewarding them for desirable behavior.

Experiences at Harris Semiconductor

Hearing the results of some of our specific experiences at Harris Semiconductor may be helpful in illustrating how difficult it is at the beginning of the process to fully chart (map out) the course which matters take in any specific organization.

As the process of continuous improvement proceeded in our water fabrication area, and the methods of SPC became firmly implanted in the manufacturing operations, it became obvious that additional gains could be made only through the use of additional statistical tools. In effect, we needed to draw a new section of the improvement "map" to best suit our needs.

DOX was the first town in our new map. We had not reached the state of total control, but DOX seemed to offer the opportunity for exponential growth and technology, now that SPC was being successfully used. Evidence to support this success came quickly after a number of our engineers were trained in the use of DOX through a cooperative program with the University of Florida Department of Statistics.

An opportunity to incorporate DOX presented itself with the arrival of a new piece of equipment which deposits silicon dioxide through subatmospheric chemical vapor deposition. Through the use of DOX and previous knowledge of the chemical processes, the system was qualified and put under statistical control in less than three weeks. At the end of those three weeks, the process made it possible to achieve the high degree of uniformity in thickness of the deposited film which is so necessary in integrated circuit fabrication. This type of equipment had long been used in the semiconductor industry, and we had initially (without the use of DOX) anticipated the setup time at six to eight weeks.

A similar experience, but with more striking results, occurred during the installation of a complex piece of plasma etching equipment. This equipment arrived for evaluation prior to purchase as a replacement for an older, less satisfactory system. During evaluation, the same DOX techniques were applied to complex factors on both the new and old systems. In the process of evaluating the equipment the engineers realized that they had never optimized the old system, and that when they did, it was as functional as the new system being considered for its replacement. The savings to the department was a third of a million dollars in capital expense.

The process of continuous improvement was now firmly entrenched in everyone's minds. Even some of the engineers who had been slow to grasp the SPC methodologies began to notice that they were less effective with their more traditional approaches, and subsequently, have shown increased interest in the quality technology. Many are now clamoring for the DOX and SPC training.

Conclusions

Improvement is the only viable strategy for survival. We are competing with companies which are not only good, but continually getting better; therefore, it is not acceptable to just "get good." We must set continuous improvement in motion. Since the improvement is often explosive (exponential) in nature, a delay in initiating improvements often means that the gap between the late starters and the first ones out of the blocks will continue to widen at an increasing rate. This lapse can be prevented only if the necessary intellect and resources are applied to redress the imbalance.

Continuous improvement comes through dealing with the controllables. Top executives must concern themselves with a large number of variables totally beyond their control, such as interest rates, takeover threats, the state of the economy, and the market. However, these executives will translate their forecasts for uncontrollables into priorities for the improvement of controllable variables such as the ability to react to shifts in the market, to quickly deliver producible designs to manufacturing, to discover and meet customer needs as they evolve, and to manufacture with a minimum of waste.

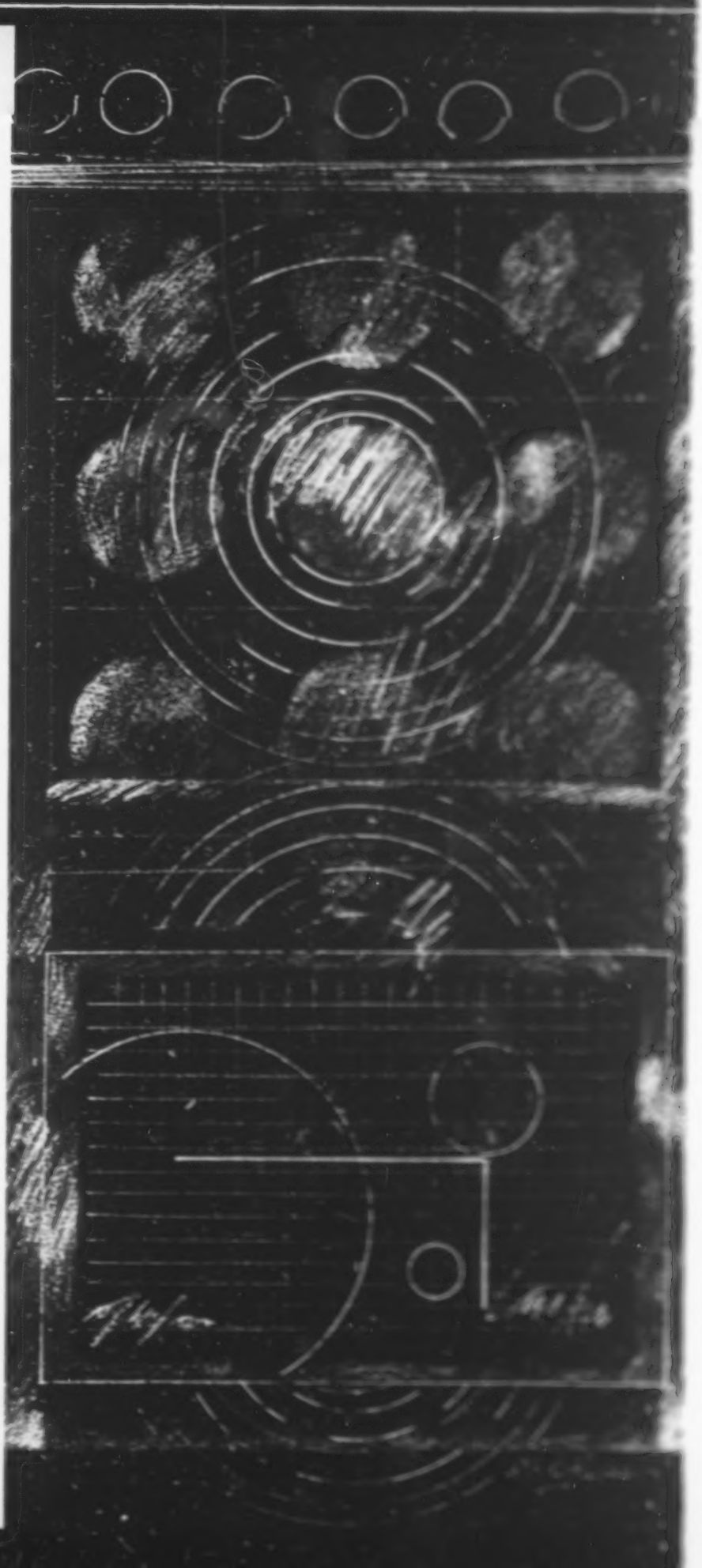
The useful consultant makes sure that those reporting to management do not have to concern themselves with the uncontrollables. Their priority should be to continuously improve the controllables.

In order to remain competitive with rivals who are well along the path of continuous improvement, we must also travel the same road, which is an ongoing process and not a once-and-for-all event. The process of evolution has involved much trial and error, and has been possible only because we learned how to make our own maps. We do not know how we will be fuelling the continuous improvement process, but we do know that to keep it going we must continue to learn. We must remain humble enough to make the course corrections which will be required, and inventive enough to learn quickly and introduce the required technologies into an environment which management has made conducive to positive change. In the words of W.E. Deming, there is no "instant pudding." ■

(Jeffrey D. Peters, Vice-President of Product Management for the Semiconductor Products Division of Harris Corporation, is responsible for Product Engineering functions. William C. Parr, Manager of Statistical Development for the Semiconductor Sector, manages the sector's statistical training programs.)

APPLYING SPC IN SERVICE INDUSTRIES

Ray M. Mundy
Russell Passarella
Jay Morse



American manufacturing, faced with relentless foreign competition, has become serious about quality control. Thus, statistical process control (SPC), initially adopted by American industry as a "survival" tool, is now becoming a managerial way of life in many firms, resulting in a fundamental change in the way these firms are managed. Furthermore, the application, or, more correctly "reapplication," of SPC to the U.S. manufacturing industry is expanding every day.

Incorporation of SPC analyses has led more and more American firms to adopt Professor W. Edwards Deming's management philosophy of increased worker participation and operational control. "Giving workers the tools from which to make better decisions" is being accepted as the only way to safeguard American manufacturing jobs and compete in world markets.

U.T.'s Role

The University of Tennessee's Institute for Productivity Through Quality has played an important role in this modern industrial revolution. Over 1,800 managers from more than 300 companies have been trained in SPC procedures by U.T. Many of these individuals have set up programs within their own firms to train thousands of others in SPC procedures. Reading control charts, constructing pareto analyses and developing histograms has become commonplace in many companies trained by personnel from the Institute.

While most of these training assistance efforts by the U.T. Management Development Center have been in manufacturing, a small but growing number has been in service areas such as the banking, insurance, and food service industries. Special administrative programs have been developed to train personnel from these service industries in Professor Deming's managerial philosophies and practices.

Spreading interest in SPC is also engulfing those service industries that link suppliers and manufacturing firms through transportation and distribution activities. As manufacturing firms employ SPC and just-in-time (Kanban) production techniques, truck and rail firms are being forced to fit their pickups and deliveries according to very tight production and distribution schedules.

Reduced inventory levels at all phases in the production/distribution network are also forcing transportation/distribution firms either to apply SPC techniques to their operations or risk being the "weak link" in the manufacturing chain.

Theory Transfer

The transfer of SPC to non-manufacturing situations often requires the pure statistician to relax a few rules, but in theory at least, some things are remarkably similar: the same analytical tools can be used by workers to solve everyday problems.

Mundy

While manufacturing has bad parts, or "defects," service industries have service failures or "customer separations" (dissatisfied customers would not use your service in the future if it were the last one on earth). Just as manufacturing processes have tolerances or standards for mechanical parts, in a similar way service industries have customer service levels or standards. In both cases, the tighter the standards, the better the fit or service provided. Manufactured parts with loose tolerances *will* work, just as a service firm with low standards will suffice, but both will be replaced if faced with superior competition.

Also, if a manufacturing process is "in control," we know that only good parts or outputs will be derived from the process. Likewise, if a service industry is "in control," only that service for which it was designed will be given.

Finally, breakdowns in the manufacturing process that cause failures can typically be researched analytically. Thus, special causes for breakdown can be identified. The same analytical procedures can be utilized to examine service processes to isolate special causes in the deterioration of the service from the prescribed standard.

Surrogate Measures

A peculiarity of service industries, however, may make the use of sound SPC techniques even more important than their use in manufacturing entities. Part specification, engineering tolerances, and failures are obviously measurable and can be quantified. However, service failures are not so easily quantified. For every angry customer who takes the time to write a complaint letter, there may be hundreds more who simply silently switch to another service provider.

While customer satisfaction surveys are often used to overcome this measurement problem, these surveys are difficult to quantify and even more difficult to use as a predictor of future consumer behavior. Thus, managers may often be unaware that their service system is out of control until they read after-the-fact financial summary data – usually printed in red ink.

The obvious payoffs of SPC are better employee morale, lower costs due to fewer production errors, and best of all, improved customer service. Improved quality is actually less expensive if done correctly.

Common wisdom tells us it would be much more beneficial for managers to gather and analyze real-time operational data for service system failures or quality deviations, rather than wait for bad news in surrogate financial data. Unfortunately, many managers have been trained only in the analysis of financial numbers, rather than in terms of what real operational phenomenon these numbers represent.

It took the threat of foreign competition to force manufacturing managers to "dig deeper" into the data. In the same way, competition is forcing service managers to dig for better numbers which are more readily available and offer more detail for problem solving.

Early Applications for Transportation

Obvious applications for SPC have been found in repetitive transportation processes. On-time-deliveries and variances from on-time can be plotted on quality control charts so that service consistency and deviation can be quantifiably measured. Also, breakdowns in on-time-delivery can be used to create pareto charts which distribute the service failures by category and help isolate causes.

Finally, fishbone charts, entailing every aspect of machines, personnel, supplies, and processes utilized in the delivery of the service, can be used to refine and improve the service quality and standards provided. Interestingly, motor carrier salesmen are beginning to use on-time quality control charts to sell the value of their transportation service as a means of combating severe price competition from cut-rate carriers.

Transportation problems such as those noted above are relatively simple repetitive freight applications.

More complex are the service quality problems associated with nonrepetitive passenger transportation. In these situations many services are provided exclusively as a "one-time" trip for a single customer on a one-time route. An example of this type of situation is an airport limousine service which is provided in either premium mode (single users) or shared-ride, where up to three parties from different locations may be booked together for their trip to/from the airport.

Airport Limousine Application

In an apparently nonrepetitive process such as airport limousine service, quality control can be exceedingly difficult. However, deeper examination reveals that limousine service is a process system with many identifiable parts: incoming calls; information taking; transfers to dispatching; dispatch orders; and the actual delivery of the service. Such process systems are commonly observed in transportation, where a customer calls for a pick-up and/or delivery which a carrier must schedule into its overall system of operations.

If only a few vehicles are used in the operation, the task is relatively simple, whereas the use of multiple vehicles in both premium and shared modes presents a formidable task. One example of specific application of SPC to the airport limousine industry is being made by Olympic Limousine Service (OLS) of northern New Jersey.

OLS is one of the nation's largest limousine fleets, with over 200 vehicles. The vehicle mix includes standard limousines, stretch and formals, stationwagons, sedans, vans, and even several buses for large parties. Thus, scheduling passenger and vehicle mixes for over 500 trips to four separate airports becomes an enormous task.

Ninety-seven percent of the time, all service requirements are met. However, slightly less than 3 percent of the time there is a service failure, or no show, as the failure is referred to in the industry. It is company policy to fill out a no-show report on every failure. To examine these no shows more closely, OLS applied the Pareto Principle to the problem.

TABLE 1

TRIP CANCELLATION REPORT FAILURE
OLYMPIC LIMOUSINE SERVICE

	Average (Number)	Average (Percent)	Aug.	Sept.	Oct.	Nov.
OLS FAILURE						
LATE						
no reason	14.0	60.87	15	15	9	17
breakdown	2.75	11.96	3	3	4	1
lost	2.75	11.96	0	0	11	0
overslept	1.75	7.61	1	0	3	3
traffic	.75	3.26	0	0	2	1
dispatch	.75	3.26	1	1	0	1
accident	.25	1.09	0	0	0	1
SUBTOTAL	23.0	100.00				
RES ERROR						
duplicate	8.25	37.93	3	1	5	8
"fake"	4.25	19.54	8	0	5	2
day/date mix-up	3.75	17.24	9	9	7	8
wrong information	3.0	13.79	1	3	0	6
dispatch not notified	2.5	11.49	0	0	5	7
SUBTOTAL	21.75	100.00				
TOTAL-OLS FAILURE	27.75		26	17	37	31
CLIENT FAILURE						
no show	20.5	76.64	12	14	37	19
forgot to cancel	16.75	62.62	14	11	20	22
cancelled at pick up	10.0	37.38	9	15	7	9
took other service	1.75	6.54	1	1	2	3
TOTAL-CLIENT FAILURE	26.75	100.00	23	26	27	31
UNCONTROLLABLE FACTOR						
flight cancelled	4.25	80.95	8	2	1	6
flight early	1.0	19.05	0	0	3	1
unforeseen weather	0.0	0.00	0	0	0	0
TOTAL-UNCONTROLLABLE	5.25	100.00	8	2	4	7
NO SHOW (NO FAULT)	74.5		94	72	58	74
GRAND TOTAL	129.0		143	115	122	136
OLS FAILURE	44.75					
CLIENT FAILURE	49.0					
UNCONTROLLABLE	5.75					
NO FAULT	74.5					

Pareto Analysis

The Pareto Principle states that quality losses are always misdistributed in such a way that a small percentage, the vital few of the quality characteristics, always contributes a high percentage of the quality loss. By categorizing losses, or service failures, and ranking the categories, one can identify and correct specific weaknesses.

Pareto analysis was applied to Olympic Limousine Service's no-show report in an attempt to identify weaknesses in service. The no-show reports were first categorized according to the following reasons:

1. No show. No reason given, or reason difficult to classify.
2. No show. Driver waited. When amount of time the driver waited was mentioned, variability in waiting time was measured.
3. OLS late. The late classification was further broken down according to mechanical or driver failure. If the delay was due to driver error, the group was further subdivided into "late to airport" and "late to city pickup."
4. Reservation mix-up. Errors in reser-

vations by OLS or client's blaming OLS fall into this category.

5. Trip cancelled at pickup or earlier the same day. Trip cancelled by the client.
6. Flight cancelled, etc. This category attempts to measure failures which cannot be attributed to OLS or the client.
7. Client forgot to cancel. Client failure (see Table 1).

U.T. analysts then grouped the reasons for trip cancellations into three areas: to OLS (26 percent); to the client (28 percent); or to an uncontrollable factor (3 percent). No-fault accounted for 43 percent of cancellations. Problems originating with OLS are obviously the easiest to correct and thus were the object of further investigation.

OLS Failures

"OLS Late" (see Figure 1) and "reservation mix-ups" (Figure 2) were immediately identifiable as weak areas. Mechanical failures were a small percentage of total no shows (less than 2 percent of total no shows). Although the no-show report was not very specific in explaining driver lateness, it showed that drivers were late to the airport more often than they were late to a city pickup. The specific reason for lateness (i.e., traffic jam in the tunnel or late drop-off of last client) were not noted, and it was recommended that in the future such details be noted.

Reservation mix-ups was a serious problem, though fault is difficult to determine. Problems which appeared in the no-show reports included "dupes" (less than 1 percent of total no shows) and day/date or AM/PM mix-ups. Missed trips due to reservation failures obviously caused client dissatisfaction.

Client Failures

No-show report analysis also revealed failures by the client such as "client forgot to cancel;" "cancelled at pickup;" and "no show – driver waited." (See Figure 3).

The "cancelled at pickup" category contained reservations cancelled during the day before the scheduled trip. Thus, it seemed evident that unnecessary trips could be eliminated by a more effective communication system between drivers and dispatchers.

Driver waiting variability is costly because equipment is not being fully utilized. In over 15 percent of the recorded instances, the driver waited for over two hours.

Overall, the initial pareto charts demonstrated several useful items for managerial consideration. In addition, they showed the need for an improved no-show report to eliminate the "no show – no reason given" category. Over 40 percent of the data collected were unusable due to this category of reply.

Uncontrollable Factors

The "flight cancelled" category was a catchall for failures which could not be attributed to the client or to OLS. (See Figure 4). With only 5.5 percent of the total no shows, the category was rather insignificant. A flight monitoring system was recommended to reduce the number of failures in this category.

The analyst thought that while no shows in this category could not be corrected, careful monitoring of the factors which cause the failures might limit the effect of the no shows on OLS.

FIGURE 1

OLS TRIP CANCELLATION REPORT
REASONS FOR LATENESS

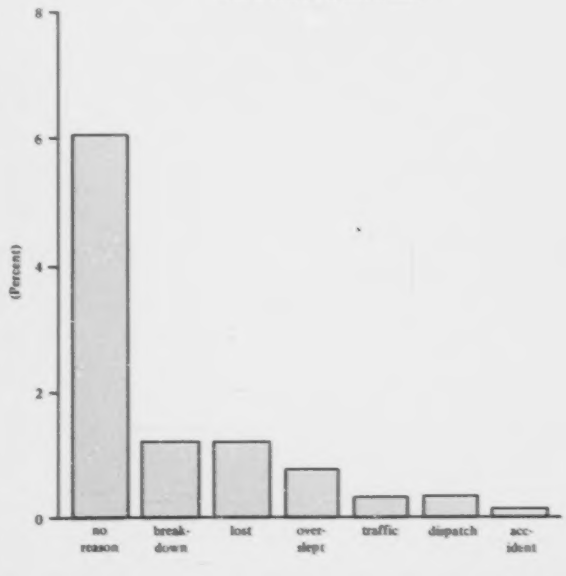
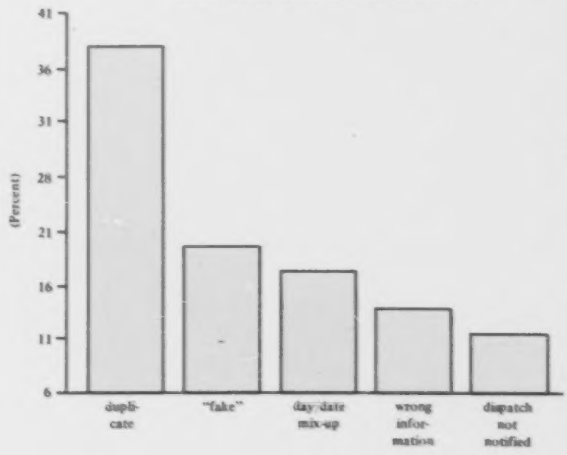


FIGURE 2

OLS TRIP CANCELLATION REPORT
REASONS FOR RESERVATION ERRORS



Initial Recommendations

Several immediate changes in the no-show reporting system were recommended. It was suggested that the report be redesigned to improve in-depth measurement of failures. In its present form, the report allowed the dispatcher too much freedom in reporting why the failure occurred. Furthermore, it was felt that the dispatcher should be instructed to look for failures which fall into the three categories identified above. The three categories could then be further subdivided to include a more detailed analysis.

Using the Deming philosophy, the analyst suggested that the dispatchers should be consulted when designing a new form: their experience would point out failures which may have been overlooked. With a more detailed (and more quantifiable) report, trends in failures, as well as variability, could be identified as specific areas in need of improvement.

Managerial Analysis

The present reporting system pointed out several weaknesses which contributed to no shows. Weaknesses as identified by the pareto chart system included:

1. Reservation mix-ups: OLS needs to be on a computerized reservation system.
2. OLS late: OLS needs improved map training, as well as a more effective method for communication with drivers from the office.
3. Driver waiting time: OLS needs to monitor more closely variability in waiting time.

Research Follow-Through

After reviewing initial pareto charts of their no-show report, OLS management felt the simple application of statistical operational data was indeed a vehicle for better management. An improved no-show report form was devised, and detailed records were kept for three months, September to November, 1985. Analysis showed that a consistent 2.6 percent of OLS trips were uncompleted or failures. More importantly, analysis showed that .05 percent were perceived to be the fault of OLS.

Encouraged by initial analytical studies, OLS broke down their own service failures into errors by times of day (Figure 5). From this breakdown, they were able to determine serious staffing errors in the 4-6 p.m. time period and realized a need to relieve the reservation/dispatcher pressures during this period.

Further analysis (Figure 6) showed the necessity for investigation as to why OLS was late with no obvious reason.

In an executive committee meeting to discuss this data, the company discovered that there was less driver availability than previously thought. Also, it became obvious that starting and ending times, (i.e., processing times for drivers), were not fully allocated for in the dispatcher's estimate of availability. This problem was causing some drivers to be late for their pickups as well as causing some vehicle unavailability.

More importantly, OLS management is sold on the principle of managing and acting through the use of simple statistical tools. As a result of the SPC pareto analysis, certain operating procedures were changed that enabled "fact" to catch up with managerial perception. A permanent operations committee was established to do more analysis on each of the functional areas. Better communications between dispatch and drivers were also initiated.

FIGURE 3

OLS TRIP CANCELLATION REPORT
REASONS FOR CLIENT FAILURE

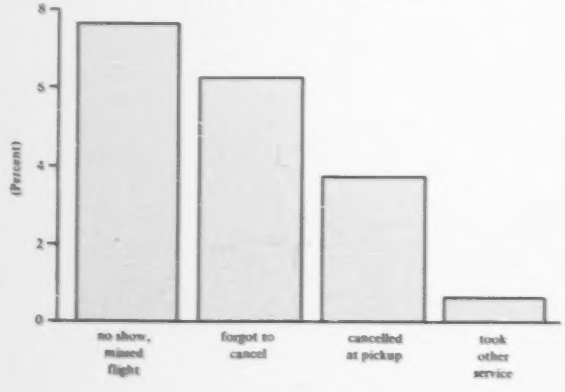
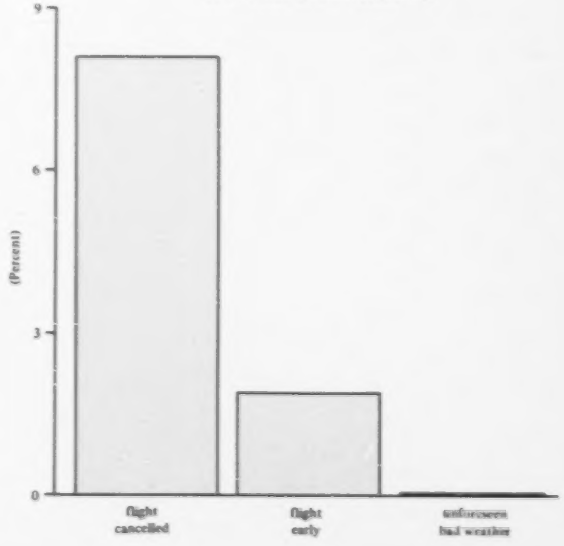


FIGURE 4

OLS TRIP CANCELLATION REPORT
UNCONTROLLABLE FACTORS



Better real-time analysis of OLS's reservation/dispatch system has also been implemented. Demand is kept current so that forecasts can be done by day of week, thereby improving average driver trip load and increasing driver availability.

Results/Lesson

For Olympic Limousine Service, the SPC process has just begun. After nine months of initial preparation and service corrections, the service took its first service quality reading in January 1986. To their delight, *service failures were down by one-third.*

OLS management is convinced their new managerial approach will improve service delivery because it involves many more people in the organization. Drivers, dispatchers, receptionists, and managers alike are encouraged to participate in and contribute to the examination of no-show data.

OLS feels confident that it is directing its efforts toward matters which are important to the maintenance and improvement of its service quality. They are not afraid to take it one step at a time. According to Russell Passarella, Vice-President of Marketing for OLS, "Half of 1 percent error or failure may not seem like much, but our goal is zero error or 'zero defects' in our quality-oriented systems. Our repeat customers expect no less."

Summary

Through the use of simple statistical tools, one service company, Olympic Limousine, already a good firm by industry standards, is seeking to become an "excellent" company and expand its services. By first gathering appropriate data, looking for patterns, and then special causes, OLS has found ways to make it better.

Such applications of SPC are only beginning. But as the initial results from OLS show, improvements can be dramatic. Service failures were reduced by one-third; thus, approximately 2,500 customers per year will be given a "normal trip" as opposed to facing a cancellation because of service failure. More importantly, OLS now has baseline data from which to chart a number of the system functions, and can begin to measure day-to-day variations in its service before they become major problems. Zero defects may not be totally achievable, but pressure and pride to keep their system in control and continually improving will surely be appreciated by OLS customers.

The lessons learned by OLS are similar to those learned by U.S. manufacturing firms that have seriously implemented SPC. It is not easy to get started. It is necessary to change managerial philosophy and to gather and analyze real data – not surrogate financial numbers. But the payoffs are great – better employee morale, lower costs due to fewer production errors, and best of all, improved customer service. Even in service industries, improving quality is not necessarily or automatically more expensive – it will be *less* expensive if done correctly.

As competitive pressures mount for U.S. service industries, it is anticipated that companies will also turn to Professor Deming's participating management doctrine and better management through statistical quality control.

(Ray A. Mundy, Professor of Marketing and Transportation at The University of Tennessee, Knoxville, is presently conducting research and consultation in the application of quality improvement techniques in transportation and logistics. Russell Passarella, MBA, Harvard, is co-founder and Vice-President of Olympic Limousine Service. Jay Morse, MBA, The University of Tennessee, is presently a financial analyst with C.S.X. Transportation.)

FIGURE 5

OLS ERRORS BY TIME OF DAY

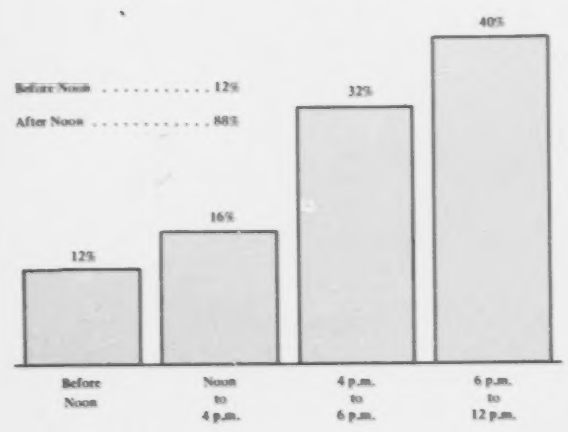
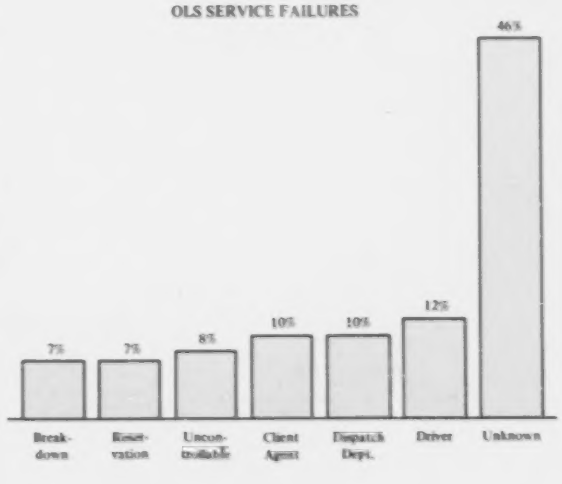


FIGURE 6

OLS SERVICE FAILURES



Quality Management Applications in a Field Marketing Organization

Walter Ambrogi
Donald L. Blair

Eastman Chemical Products, Incorporated, the marketing arm of Eastman Chemicals Division, Eastman Kodak Company, has begun an extensive plan for implementation of quality management principles. The Chemicals Field Marketing Division, following the quality management process developed at Eastman (see Figure I), has made significant progress towards applying this model to the way it does business.

The Quality Management Process

The Quality Management Process (QMP) is a managerial process to establish control and achieve continual improvement. Its ultimate purpose is to enable the unit's products and services to lead in quality and value as judged by that unit's customers. Particularly well suited to helping nonmanufacturing units and upper management implement quality management using fundamental concepts, the process can be divided into four major blocks:

Block I: Organizational Assessment. This block focuses actions on developing a mission statement; documenting key inputs, processes, and outputs which leave the organizational boundaries; and setting up key result areas and measurements which indicate the unit's performance *as judged by the customer*.

Ambrogi

Block II: Management Control Systems. This area focuses attention on the performance levels needed by a customer which are monitored by the unit's key result area measurements. Control limits and a target performance level, determined through customer discussions, are the basis for the unit's management control systems. These measurements are then monitored using statistical process control. Emphasis is placed on corrective action to permanently remove causes of poor performance or defects from the system.

Block III: Improvement Planning. Opportunities for continual improvement feed the improvement planning block from both organizational assessment and management control systems. During organizational assessment, a unit may quickly realize through customer discussion that its products are performing at an unsatisfactory level. On the other hand, some processes are so complex that it may take statistical analysis to pinpoint a problem.

Block IV: Improvement Projects. Within the improvement project block, teamwork is crucial. A team is formed to address both the diagnostic journey to find the true cause of the problem and then a remedial journey to implement the remedy for the problem's cause. These steps will in turn result in an improvement which is continually monitored in the management control system block with unit key result area measures.

Within the improvement project block, teamwork is crucial to address both the diagnostic journey to find the true cause of the problem and then a remedial journey to implement the remedy for the problem's cause.

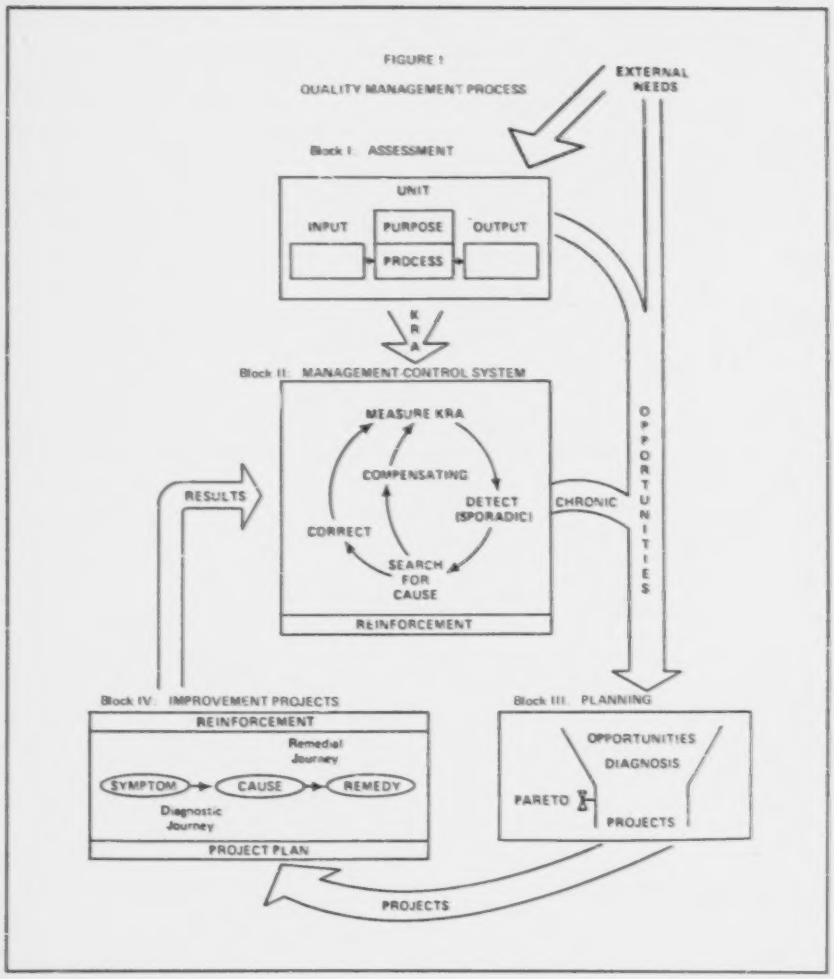
The Mission Statement

In early 1985 the Chemicals Field Marketing Division team first brainstormed a list of all Chemicals Field Marketing Division inputs, processes, suppliers, customers, and outputs. The list of outputs contained some 65 products which left the boundaries of the organization. To choose the most significant few, the Division used the Pareto Principle: 20 percent of the products typically give 80 percent of the results. Each team member was given 13 votes and allowed to pick from the list. Finally, the team came up with three main products for the division: chemical sales, market intelligence, and customer relationships. Following identical procedures with lists of customers, outputs, and processes, the team developed the Chemicals Field Marketing Division mission statement: "To manage the relationship between Eastman Chemicals Division and the customer by selling assigned products that meet our sales customer needs, building long-term customer relationships, and providing market intelligence to all Eastman Chemical Divisions."

Key Result Areas and Measurements

Next, the team focused on developing key result areas and measurements. They immediately chose sales as the most important key result area and sales dollars as the measurement. When, through statistical analysis of weekly 1984 sales data, the team saw intense sales deviations, they set out to develop a sales management control system to track down causes of such deviations. Thus, they developed a sales manager control system, in which system, the division director monitors total division sales. If a deviation occurs, it is pinpointed in the eastern area, western area, or with the distributors. Next, the area managers pinpoint deviations in sales at the district level, and district managers pinpoint product and customer account deviations. The field market representative, the eyes of the organization, will then meet with the customer and pinpoint the assignable cause. Previously, the division has always followed this procedure. What is new is the application of the principles of documenting and permanently removing the cause. Before implementing quality management, the division would fix the problems as they happened and never worry about recurring causes. Now emphasis is placed on permanently removing the cause.

Blair



Improvement Projects

Ultimately, three improvement project teams were formed in 1985. Area managers, district managers, account managers, field market representatives, and an industrial engineering facilitator worked on the following areas: (1) a quality sales call format; (2) measuring and improving customer relationships; and (3) improving market intelligence capability and communication.

Quality Sales Call

In February 1985, a team assigned to come up with the basis for the elements of a quality sales call broke the sales call into three major categories: planning, negotiating, and closing. Next, these categories were broken down into 17 major elements of a quality sales call, and the team formed a checklist and a grading system. The checklist is now being used (1) as an individual control system for the field market representative to critique the process of making the sales call; (2) as the "curb-side" conference format for all joint sales calls when the district manager travels with the field marketing representative; and (3) as an important training vehicle to be incorporated into the training program.

Customer Relationships

The charter for the customer relationship quality improvement team was to determine Division effectiveness in building and maintaining long-term customer relationships. The first step was to develop a list of the division process variables that influenced customer relationships, including entertainment, market and product information flow, management accessibility, etc., and then to develop a supplier relationship survey. The customer was asked first to rank the factors according to his own individual performance and then to grade Eastman on a 1-to-10 scale, as well as to judge some of Eastman's competitors.

Market Intelligence Capability

To control the process before the product is made, a company must use its process responses. This is where market intelligence is so important. The team soon realized that the Chemicals Field Marketing Division did not have a top quality process to catalog, analyze, and distribute market intelligence to their customers. They wanted an acquisition system to gather the information; a transmission system to send it to the home office; a storage, retrieval, and analysis system at the home office; and then a system to distribute the information to customers. Now being implemented, this system is taking the form of a computerized Chemicals Field Marketing Division market intelligence data base.

The quality management process is customer driven and has already proven itself through favorable customer impact. When quality management systems are fully in place, the teams believe they will have incorporated the following four summary principles:

1. There will be management control systems on sales, customer relationships, and market intelligence.
2. Control will be tighter, allowing the teams to spend more time making improvements in quality and productivity that can be measured.
3. The teams will progress in a positive manner for continued improvement on division key results.
4. Last, and most important, is the assurance that Eastman Chemicals Division chemical sales will increase as a result of the implementations. ■

© copyright 1986, Eastman Kodak Co.

(Walt Ambrogi is Director of Chemicals Field Marketing Division, Eastman Chemical Products, Inc. Don Blair is an Industrial Engineer in the Management Engineering Services Department of Tennessee Eastman Co.)

JAMES RIVER CORP: Development of a Quality Culture

Dan Butterfield
Patrick Burke

James River Corporation's entry into the development of a "quality culture" began in 1982 when mill management recognized the need to change the company's attitude toward quality management. During this period James River was experiencing new challenges in the Airlaid business, and the addition of new product lines in the disposable personal/health care area demanded stringent quality requirements.

As a result, quality assurance techniques were restructured from testing of nonconformities per square inch to nonconformities per square millimeter, at a ten to one ratio reduction. Customers also expected manufacturing to follow FDA's good manufacturing practices. Our new customers were demanding to know the distribution of individual values for each shipment, rather than average values.

Instituting the Principles

After hearing of the success of Bill Conway of the Nashua Corporation through his strong support of Dr. Deming's principles and the use of statistical techniques, several of our managers decided to attend Dr. Deming's seminars. At about the same time, employee involvement had developed to the point of forming a management business team in the Airlaid operation, with a focus on Dr. Deming's principles of quality improvement. The University of Tennessee's Institute for Productivity Through Quality was selected to train in-house facilitators in the basic principles of Statistical Process Control (SPC). When our trainees returned from the University of Tennessee, Knoxville, they developed and conducted a 40-hour training program for the business team. Subcommittees then selected several quality characteristics, collected data, and started control charting for several processes. In addition to these efforts, the team has also developed a close working relationship with their pulp, corrugated box, and latex vendors.

Departmental Quality Integration

Other departments of the Green Bay Mill have benefitted from the Institute's training as well. For example, our Woodlands operations consists of purchasing wood fiber from three satellite chip mills to supply our sulfite pulp mill operation. In the past, the incoming inspection of chips was costly and ineffective, in that our sampling plan consisted of a grab sample at the rear of a truck in order to estimate the content of the entire load. The process was inefficient and needed to be re-evaluated.

Within the improvement project block, teamwork is crucial to address both the diagnostic journey to find the true cause of the problem and then a remedial journey to implement the remedy for the problem's cause.

Recognizing the need to incorporate quality with efficiency in our operations, we designed a strategy to meet this goal. With our goal in mind and our plan of action set, we took the necessary steps to implement the processes.

Implementing Process Control

First, we designed an automatic sampling device to incorporate credibility into our testing. Next, during a two and one-half day seminar, we trained our Woodlands supervisory staff, who in turn trained the operators, and began collecting data to plot on a control chart.

Operators have now regained control of their own processes. Often when problems arise, vendors are contacted in order to make quality improvements, and specifications are revisited. As a result of the improved quality, long-standing adversarial relationships between vendors and customers have diminished. Chip suppliers to the Green Bay Mill forward copies of their control charts to the mill as certification of their process. Process control at the chip mills has virtually eliminated rejectable chip shipments; therefore, incoming chip quality inspections at the Green Bay Mill have been eliminated. Financial returns from changing inspection from incoming to in-process is substantial.

We have also introduced the Deming quality approach into our paper mill through its business teams and hourly employees. Crew quality teams have now been developed for quality improvement projects. We will continue integrating training programs through all departments, including the purchasing department as well as our vendors. We are convinced that using statistical process control will further improve our products.

Measuring Benefits

It is difficult to measure all of the benefits from this quality improvement. However, we do know that our pulp and paper mills are more efficient with less interruptions. In addition to these advantages, employee morale has improved, as well as our quality and consistency.

Successful implementation of these quality processes requires active ongoing management training, understanding, commitment, leadership, participation, and support. Success thrives only in a participative management atmosphere. ■

(Dan Butterfield is the SPC Coordinator at James River Corporation. Patrick Burke is Manager of Conventional Operations.)

A PRODUCTIVITY RESEARCH PROGRAM: What Makes SPC Work?

Clyde R. Keller

In the summer of 1984, a group of participants in the Productivity Through Quality Institute Alumni Program were standing around talking about statistical process control. They were discussing the company that had won the award in the annual competition sponsored by the Institute and speculating about why one company was more successful than another in the application of SPC.

The more I listened, the more interested I became. After two days of talking with scores of managers from light manufacturing, heavy manufacturing, high and low technology, and service industries, I learned that no one really knew what made SPC work better in one company than in another. Everyone had a preferred theory and everyone had the stories and examples to support a particular philosophy. But no one could support any theory scientifically.

This situation really got my attention. In an organizational approach to quality improvement, SPC was the common linkage, but beyond that, there was little similarity in the procedures followed by most organizations. Some companies had only their manufacturing systems on SPC. Others had their accounting, finance or purchasing departments involved. Some saw SPC as a quality control function; some, as a management function; and others, as a productivity improvement effort. Everyone using SPC, regardless of degree of involvement, was enthusiastic; in fact, some could be described as controlled fanatics. They believed in and faithfully supported the system. Often one of these managers would remind us that SPC was not an end in itself, but one part of a total quality management program. Invariably, however, SPC was obviously the key point of interest.

The more I questioned these managers, the more factors they added to my list of ingredients for a successful SPC program. By the end of the Alumni Program, I knew a major area of research had been identified that could benefit business, industry, government and the University. After talking with C. Warren Neel, Dean of the College of Business Administration at UTK, I was encouraged to set up a productivity research project to answer the questions that had been asked of the Alumni participants: What makes an SPC program work in one company better than another? or What makes an SPC program work better in one part of a company than in another part? A group of UTK professors, representing a variety of functional areas, were chosen to start the first research project. They were David L. Kaserman, Economics; Alex Miller, Strategic Management; Michael E. Gordon, Industrial and Organizational Psychology; and John W. Philpot, Statistics. As a result of discussions and debates, new areas of interest arose indicating the necessity for input from new functional areas: Accounting and Finance, Marketing and Transportation, Logistics and Distribution, Decision Sciences, Industrial Engineering, and others. Research subjects now included quality cost, material resources planning, just-in-time inventory, computer-integrated manufacturing, strategic management of systems, effects on labor/management relations, organizational change, and organizational structure, as well as SPC implementation issues.

To process, analyze, and store the information we would collect, we decided to create a data base somewhat like the Product Information Marketing System (PIMS), from which we could ask "what-if" questions. For example, if we could determine the factors that made a successful SPC implementation and operation, and if we could determine where any particular company was in a point of time, we could identify the necessary tools to move the company from where it was to where it wanted to be.

So the project team, now including G. Harlan Carothers, Jr., a management consultant to business and industry, set out to identify the issues to be studied and the questions that needed to be asked to discover what makes a "successful" SPC implementation. Over a year passed before the first survey questionnaires were ready to be sent to a core group of 20 companies, asking for their input. Project members visited a number of organizations to see the SPC system at work, and representatives of the core companies and the research project team met several times to critique the survey instrument and suggest improvements. At last, the questions and issues became clearer. All that we needed now was the answers. At this writing, the survey questionnaires for the first major project have been completed. As a result of a suggestion from one of the core company evaluation teams, we have added a new touch to social survey research by introducing the project with a video tape made by members of the research team to explain the focus of the questionnaire and the benefits to the participating companies. Five new projects are in various stages of evolution, with new issues arising each day. Two Ph.D. dissertations dealing with productivity through quality are now in process, and professors from six major functional areas are involved with representatives from business and industry to find the answers to innumerable interesting questions relating to quality management. ■

410,SVY,SRIWASHINGTCN
CONGRESSIONAL INFORMATION SERV
4520 EAST-WEST HIGHWAY
BETHESDA, MD 20814

The University of Tennessee
Spring 1986
Volume 21 Number 3

Survey of Business

48710-1

Center for Business and Economic Research College of Business Administration The University of Tennessee, Knoxville

NEW TRENDS IN LABOR RELATIONS

Summer 1986

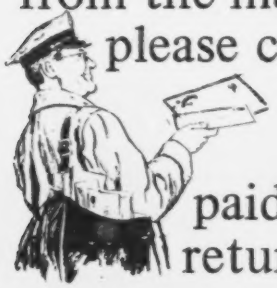
Survey OF BUSINESS

A Tribute To J. Fred Holly

Are You On Our Mailing List?

The staff of the **Survey of Business** is currently in the process of updating the mailing list and we need your help. If you are no longer at the address we have on file; or if you are receiving a copy of the magazine originally intended for someone else in your firm; or if you wish to have your name removed from the mailing list, please complete the attached, postage-paid mailer and return it to us.

Of course, if you are not already on our mailing list, we hope that you will use the card to become one of our regular readers. The **Survey** of Business will keep you informed about current economic and socioeconomic trends developing in the state and up-to-date issues of interest to businessmen and women across Tennessee.



Center for Business and Economic Research
The University of Tennessee, Knoxville

PERSONNEL

C. Warren Neel, Dean
College of Business Administration

CBER APPOINTMENTS

David A. Hake, *Director and Editor,* **Survey of Business**

William F. Fox, *Associate Director and Research Associate Professor*

John W. Mayo, *Research Assistant Professor*

LeRoy T. Hansen, *Visiting Research Assistant Professor*

Maxwell J. Cornelius, *Manager, Computer Resources Group*

George A. Mundrake, *Coordinator, Instructional Support*

Patricia A. Price, *Sr. Research Associate*

Betty B. Vickers, *Research Associate*

Susan E. Bott, *Research Assistant*

Lillian Mason, *Research Assistant*

Melissa Wood, *Research Assistant*

Deborah W. Crowder, *Office Supervisor Computer Resources*

Carol E. Schmidhammer, *Research Associate*

Jean Knuckles, *Administrative Manager*

Jennifer F. Langston, *Sr. Secretary*

Donna Kemper, *Secretary*

Laura McCollough, *Clerk/Typist*

Mary Long, *Clerk/Typist*

Sandra L. Turner, *Data Specialist*

Graduate Research Assistants

Maria Teresa Hocson
Joseph Flynn
Tim Essenburg
John Majors

Consultants

Kenneth E. Quindry
Research Professor Emeritus

Art Director

Richard J. LeFevre, *Associate Professor of Art*

PUBLICATIONS GROUP

Jeanne P. McDonald, *Managing Editor*

Rebecca Kelly, *Publications Coordinator*

Joan M. Strong, *Editorial Assistant*

Patricia A. Hunley, *Word Processing Group Supervisor*

Patricia D. Flynn, *Word Processing Specialist*

Julia C. Elkins, *Word Processing Specialist*

Amy LeFevre, *Technical Art*

Jennifer Jordan, *Technical Art*

The University of Tennessee
Summer 1986
Volume 21 Number 4

Survey OF BUSINESS

CONTENTS

Thirty Years of Labor-Management Relations: The Holly Legacy 5
by **Barbara Haskew.** *Ms. Haskew traces Fred Holly's career and explains how his personal qualities enhanced his career as teacher and arbitrator.*

Examining the Japanese Industrial Relations System 7
by **Koji Taira.** *The author examines the rise of Japan as an industrial power and its interrelationships with American industry.*

Where Have All the Unions Gone? 13
by **Donald E. Cullen.** *Why has union membership declined so significantly? Mr. Cullen explores some of the possibilities.*

Saturn's Strategic Role in Industrial Relations 23
by **Donald Ephlin.** *Although last year's U.S. merchandise trade deficit signals a crisis in American industry, the preliminary agreement between the UAW and Saturn Corporation possibly defines a new approach for facing the competitive challenge.*

NLRB: Providing Remedies for Labor's Ills 27
by **Peter G. Nash.** *The author relates the history of the National Labor Relations Board and explains the originally intended function of the National Labor Relations Act.*

Productivity and Collective Bargaining 29
by **Michael L. Brookshire.** *International competititon threatens both the jobs of American workers and the health of the economy. Mr. Brookshire sees effective productivity bargaining as the key to stabilizing the situation.*

Are Strikes Obsolete? 33
by **Bruce Thrasher.** *The author discusses the recent decline of strikes in the U.S. and explains the role of the strike in the collective bargaining system.*

THE AUTHORS

Barbara Haskew, *Chief of the Rate Design Staff, Tennessee Valley Authority, formerly held academic posts at Middle Tennessee State University and Memphis State University. J. Fred Holly directed her doctoral research, which was completed in 1969.*

Koji Taira *is Professor of Economics in the Institute of Industrial Relations, University of Illinois, Champaign, and author of many publications on Japanese economic history and industrial relations.*

Donald E. Cullen *is a Professor at the New York State School of Industrial and Labor Relations at Cornell University, and editor of the* **Industrial and Labor Relations Review.** *He has extensive publications in collective bargaining and government labor policy.*

Donald Ephlin, *Vice-President of the United Automobile Workers, and Director of the Union's General Motors Department, negotiated the contract with the Saturn Corporation.*

Peter G. Nash *is a partner in the Washington law firm at Ogletree, Deakins, Nash, Smoak and Stewart. He has served as Solicitor of the U.S. Department of Labor and as General Counsel of the National Labor Relations Board.*

Michael L. Brookshire *is Director of the Industrial Relations Program, West Virginia College of Graduate Studies, Institute, West Virginia. Most of his publications are in collective bargaining and labor law. J. Fred Holly directed his doctoral research, which was completed in 1975.*

Bruce Thrasher *is President of Thrasher and Associates, Inc., Employee/employer Relations Consultants, Trussville, Alabama. For many years he worked for the United Steel Workers and served as the Union's Regional Director.*

SURVEY OF BUSINESS, The University of Tennessee, Knoxville (ISSN 0099-0973), is published quarterly by the College of Business Administration, Center for Business and Economic Research, The University of Tennessee, Knoxville to inform the Tennessee business professional about current economic and socio-economic trends and techniques developing in the state. Authorization No. EOI-1490-001-83. Back issues and article reprints may be ordered at $1.25 per copy. Address correspondence to Editor, Center for Business and Economic Research, Suite 100, Glocker Hall, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170. Second class postage paid at Knoxville and Nashville, Tennessee. Requests for inclusion on mailing list and address corrections should be sent to the same address. The publisher of the **Survey** *assumes no responsibility for statements made by writers. Articles reflect the opinions of the authors. Postmaster: Send Change of Address form 3579 to: Center for Business and Economic Research, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170.*

IN MEMORIAM

This issue of the **Survey of Business** is dedicated to the memory of Professor J. Fred Holly, whose identity with The University of Tennessee and its College of Business Administration spanned nearly five decades. He was a wise and generous friend and colleague whose death on August 9, 1985 was mourned by countless numbers whose lives touched his and were thus enriched.

A native of Elizabethton, Tennessee, Fred graduated from Milligan College with honors in 1937. That fall his association with The University of Tennessee began when he entered the University as a graduate student and fellowship holder in economics. One year later, he received the M.A. degree from UTK and entered the doctoral program in economics at Clark University in Wooster, Massachusetts. Although his graduate program was interrupted for various periods of academic and industrial employment and government service, he received the doctorate from Clark in 1949.

Fred's employment included periods in the communications, food, pharmaceutical and textile industries, and his early academic employment was as a professor of economics, business manager and treasurer of his alma mater, Milligan College.

In 1947, Fred Holly returned to The University of Tennessee as a member of its faculty, heading the Department of Labor Relations from 1949 until 1951, at which time that department was merged with the Department of Economics. He served as professor of economics and as head of the expanded Department of Economics from 1951 until 1968. Under his leadership the department established the first doctoral program in the College of Business and expanded in size from five full-time faculty members to eighteen. Always a popular teacher in the introductory courses and in the undergraduate courses in his areas of specialization, such as collective bargaining and settlement of labor disputes, he was particularly effective as a mentor to graduate students. To date no department member has surpassed the number of doctoral students he supervised, and in each case he forged a close personal relationship that continued well beyond the day the degree was awarded.

Those who knew Fred Holly well will agree that he was a gentle and considerate individual who in a quiet and effective way was always interested in reasoned and peaceful solutions to problems, whatever their nature. This was clear in his teaching and in his relationship with faculty colleagues, but even more evident in his chosen professional emphasis within the field of labor relations. While a good theorist, he was not content to speculate from the ivory tower about wage theory, voluntary unemployment or imperfections in the labor market. A keen student of labor institutions and labor history, he was likewise not content to dwell on the past. Rather, he found in the friction of labor-management discord an arena in which he could make a unique contribution based on a rare blend of intellect, knowledge, commitment, integrity and personality. During the 36 years starting in 1948 when he began his arbitration years and his retirement from active arbitration in 1984, he assisted in the resolution of perhaps 2,000 labor disputes of regional and national origin and significance. He was in great demand as an arbitrator, and served as permanent umpire for the U.S. Postal Service, Brown Shoe Company, Owens-Illinois, and several other firms. He also arbitrated salary disputes between major league baseball players and club owners.

The highly successful Conference on Current Trends in Collective Bargaining developed by Dr. Holly in 1957 continued after his official retirement from the University in 1958 until his death in 1985. This program annually brought up to 300 representatives of labor, management, law and government together for discussion of pressing current problems. For that effort he received the Faculty Distinguished Service Award from the National University Extension Association in 1987. He was recipient of a number of other awards, including selection by the American Arbitration Association as the outstanding labor arbitrator in the Southeast in 1981. In 1980 Milligan College conferred on him an honorary doctorate.

Fred is survived by his wife of 43 years, Wilma. Through those many years she provided an environment of support and encouragement. She was particularly effective as the wife of the department head in helping new faculty locate housing and become acquainted and settled in a new environment.

Few of us are able to touch as warmly and deeply as many lives, to contribute so much to a profession, or to serve one institution as long and faithfully as J. Fred Holly. He is greatly missed by all who knew and loved him.

John R. Moore,
Associate Dean,
College of Business Administration

John R. Moore is Associate Dean of the College of Business Administration, The University of Tennessee, Knoxville. A member of the UT faculty since 1954, he also served as Head of the Economics Department.

CONSULTING EDITORS' COMMENTS

The opportunity to pay tribute to the late J. Fred Holly, our friend and colleague, is a great honor to the editors. Like several of the contributors to this issue, we have benefitted greatly from our association with Dr. Holly, and John Moore's words reflect our own appreciation. As consulting editors for this issue of the **Survey**, we are fortunate to have received generous assistance from both academics and practitioners, as befits Holly's contributions as a teacher and as a direct participant in the industrial relations process.

Fred Holly's professional lifetime spanned a particularly interesting era in labor history. The year 1937 was a watershed in industrial relations in many respects. It was the year that General Motors and U.S. Steel recognized industrial unions representing their employees. It was the year that the Supreme Court upheld the constitutionality of the Wagner Act and of minimum wage laws, and thus set the stage for a new sort of government labor policy. It was the year in which tax collections began for the new Social Security Act, and the old age pensions and unemployment benefits provided by that law began to be implemented. It was also the year that J. Fred Holly received his bachelor's degree from Milligan College, entered graduate school at The University of Tennessee, and launched his professional career.

In the first article, "Thirty Years of Labor-Management Relations: the Holly Legacy," Barbara Haskew presents a view of Holly as teacher, as arbitrator, and as a human being. If his fledgling career coincided with the beginning of a new era in labor-management relations, there is a sense in which the young man from Carter County was present at the creation.

Koji Taira's contribution, "Examining the Japanese Industrial Relations System," gives insight into the Japanese system of industrial relations — a system quite different from the American system of Holly's lifetime, but with some fascinating interrelationships. Japan's rise as an industrial power has certainly had a strong impact on American industrial relations, and if the era that began in 1937 is indeed at an end, the influence of the Japanese model may be an important contributor to its decline.

Our next article, "Where Have All the Unions Gone?" by Donald Cullen, addresses the question of whether or not the industrial relations era that began in 1937 might have ended, perhaps at a time somewhere near Holly's death in 1985. Professor Cullen gives us a scholarly and a careful analysis of the decline in union membership during recent years.

The fourth article, "Saturn's Strategic Role in Industrial Relations," is written by Donald Ephlin of the United Automobile Workers. Mr. Ephlin recently negotiated an innovative collective bargaining agreement with the Saturn Corporation. (We are sorry that the negotiators for Saturn were unable to contribute their own view of the contract.) Ephlin believes that a restructuring of managerial style (and worker reaction) will lead to increased productivity and a more competitive position for American industry in world markets.

The fifth article, "NLRB: Providing Remedies for Labor's Ills," is written by Peter Nash, a Washington attorney who represents primarily an employer clientele. Nash addresses the issue of alleged changes in the philosophy of the National Labor Relations Board under the current Administration, viewed by unions as hostile toward individual workers' rights. He argues that the unions' eroded economic and political clout is the basis of their criticism of the Board and that a wise Congress never intended the National Labor Relations Act to protect individual worker acts or rights unrelated to collective bargaining.

The sixth article, "Productivity and Collective Bargaining," by Michael L. Brookshire, deals with the role of productivity bargaining in contemporary industrial relations. He describes recent experience in tying wage increases in collective bargaining agreements to productivity gains.

The final article, "Are Strikes Obsolete?" is written by Bruce Thrasher, a labor-management consultant and former official of the United Steel Workers union. Thrasher views the recent decline in strikes as cyclic, caused by the economic climate, and not representative of a shift away from strikes in the future.

While all of our contributors may not agree that an epoch in American industrial relations is at an end, most (if not all) would agree that the American economy and its labor force are undergoing dramatic change. Our economy is challenged by strong competition from goods-producing industries abroad, accompanied by a threat of loss of American jobs to foreign enterprise. Domestically, the labor force is experiencing large shifts among industrial and occupational sectors, reflecting the growth of service industries at the expense of goods-producing industries, and its demographic composition is changing as large numbers of women, nonwhite workers and highly educated young workers enter the labor force.

The articles seem to emphasize that if America is to maintain its economic strength, its industrial relations system can either lead or follow, but change it must.

Roger L. Bowlby
and William R. Schriver
Consulting Editors

William R. Schriver is Research Director, Construction Resources Analysis, at The University of Tennessee, Knoxville. He has held academic posts at Memphis State University and the University of Mississippi and has served as a labor economist with the Tennessee Valley Authority and the U.S. Department of Labor. Roger L. Bowlby is Professor of Economics, The University of Tennessee, Knoxville. He has held academic posts at Michigan State University and Iowa State University and has extensive foreign experience as a labor expert with the International Labor Office.

He was perfectly suited for the role of arbitrator
... because he combined a sharp analytical mind
with an
sense of fairness.
37
J. LaFevre

Some details of this artwork as well as photos and illustrations on pp. 12, 14, 17 and 31 are adaptations from *The U.S. Department of Labor Bicentennial History of The American Worker*, U.S. Government Printing Office: 1976 0-213-045.

30 Years of Labor-Management Relations: THE HOLLY LEGACY

Barbara Haskew

Rarely has a set of beliefs and convictions so consistently flowed in a natural unity through all aspects of a man's career and human interactions as in J. Fred Holly.

Dr. Holly firmly believed in people and their potential, in the ability of rational men to learn and work together to resolve problems. In collective bargaining he found the preferred and practical process that a democratic society should use to make decisions about a wide range of wage and employment issues. For him the process provided the opportunity for the worker to preserve his rights and dignity in the modern industrial workplace. He was convinced that collective bargaining worked, and he devoted his life both to explaining its advantages to a legion of students and to applying it as a day-to-day practitioner.

How Fred Holly, born into a small East Tennessee mountain community, should become such a force, both regionally and nationally, for professional labor management relations challenges the imagination. In his formative years he must have been buffeted by the attitudes of the agrarian economy and the innate distrust of unionism that prevailed in his environment. Perhaps he was influenced by the experience of the Depression years, the questions that thinking men asked themselves, and the solutions hammered out in that period of experimentation and need.

When I first encountered Fred Holly almost 30 years ago, he was an impeccably dressed man in his middle years teaching economics and labor relations. He possessed unending patience and a quiet good humor. The students who gathered in his classrooms at The University of Tennessee were even then largely the first generation to attend college from the backroads and backwaters of the state. The fact that Dr. Holly was not heavy-handed about teaching economics or espousing the significance of collective bargaining in an industrial society (there was nothing of the union evangelist in him) made him all the more effective to the southern youths who daily participated in those discussions. He presented collective bargaining as a conservative alternative to industrial strife, an opportunity for improved worker morale and productivity, and an essential ingredient in the growth of the fledgling Southeastern economy. The prevailing attitude was that collective bargaining was somehow un-American, and from the well of his expertise and experience, Dr. Holly demonstrated that the process was really in the mainstream of the American capitalistic system and democratic process.

The Arbitration Process

If Fred Holly had only taught economics and collective bargaining, his contribution to the development of professional labor relations in the Southeast would not have been significant. However, he was not only observer and analyst, but also an important practitioner in the arbitration process. Just as strongly as he believed in collective bargaining, Dr. Holly was convinced that arbitration was the means to settle unresolved disputes that could not be mutually negotiated. He was perfectly suited for the role of arbitrator, not only because of his education in the economics of the workplace, but because he combined a sharp analytical mind with an innate sense of fairness. Among his major contributions to arbitration were his published awards! The Labor Arbitration Reports published by the Bureau of National Affairs are still used by arbitrators and labor and management professionals to review the decisions of seasoned and experienced arbitrators. These volumes also contain biographical sketches that permit those who use these services to examine the backgrounds and breadth of experience of the arbitrators.

Gradually, over several years, the orbit of Dr. Holly's influence as an arbitrator expanded to encompass the growth of the economy and contractual agreements in the Southeast. John P. Gaither of Witt, Gaither, and Whittaker noted that Dr. Holly could have increased his caseload even faster and further "if he hadn't been so honest. Fred was unwilling to split the difference just to throw the losing party a bone. With Fred you always knew you were going to receive a well-reasoned and honest award."

During the more than 30 years that Dr. Holly arbitrated, his expertise and reputation for fairness led to his inclusion on major national rosters of agencies providing arbitration services – the American Arbitration Association and the Federal Mediation and Conciliation Service. In 1960 he was elected a governor of the prestigious National Academy of Arbitrators among such distinguished company as Willard Wirtz. Because of Dr. Holly's demonstrated expertise, he was appointed to numerous permanent panels for several major industrial and manufacturing concerns and organizations. During the last few years much of his professional time was devoted to arbitrating issues for the U.S. Postal Service and its several unions.

The volume of cases that Fred heard in his prime (in some years over 100 cases) led him to be a recognized expert in many of the traditional issues and areas. As such, he was frequently quoted in other arbitrators' awards. Further, his analysis of over 1,000 discharge awards, along with the rules he delineated in assessing good or just

cause for discipline, remain a relevant guide for arbitrators today.

A continuing theme – respect for the collective agreement jointly negotiated by the parties and an unwillingness to substitute his judgement for decisions that the contract reserved to the parties – was established in Dr. Holly's earliest cases and strengthened as his arbitration practice developed. Among the most historic cases he participated in was one of the famed *steelworkers' trilogy*. The case of Warrior and Gulf Navigation Company and the U.S. Steelworkers of America was a landmark decision of the Supreme Court, affirming the obligations of the parties to arbitrate and establishing arbitration as the preferred process of dispute resolution. Dr. Holly determined the dispute (over the subcontracting of work) to be arbitrable, but carefully refrained from suggesting remedies that should flow from future arbitration or negotiation.

Clearly, the case that Dr. Holly enjoyed most was the salary dispute he arbitrated between Ron Cey and the Los Angeles Dodgers. Impressed by the ability and record of Cey, Fred ruled in his favor. His interest in the talented ballplayer grew so much that in later years he became friends with Cey and, between cases in Florida, found time to watch him in spring practice.

The Holly Philosophy

A number of years ago when I was seeking admission to the arbitration rosters, Dr. Holly permitted me to accompany him to a hearing realizing that no amount of teaching would substitute for actual participation in the real process. On the return trip through Springfield, Tennessee, he talked about the day-to-day practice of arbitration. It could be, he noted, pretty dull stuff. (Most hearings are held in overheated conference rooms at the manufacturing plant or in rented motel rooms and can be filled with long and often tedious testimony.) But if it was important enough for the union and management to hire you and embody you with their decision making authority, then the situation deserved all of your powers of listening and analysis. Sometimes your award, he counseled, will decide if a man keeps his job or if a company can use its work force in a manner that will permit it to remain competitive. It will not always be clear-cut, he warned; it may wake you up in the middle of the night. But within the limits of the authority provided you by the collective agreement, you are there to provide justice in the workplace. Make arbitration a healing process, he advised; give the parties an honest and just award that will resolve the issue that brought them to impasse and arbitration, and let them get on with their business and their lives. You may never see these parties again, but your award could have impacts for months and years to come.

Make arbitration a healing process, he advised; give the parties an honest and just award that will resolve the issue . . . and let them get on with their lives.

Dr. Holly also had strong feelings about the mechanics or procedural aspects of awards. Keep it brief, he suggested; the parties do not want eloquent verbiage at their own expense. Speak to the narrowest issue possible; if the parties had wanted a sermon on a range of other matters they would have hired a preacher. Give them an award, if you can, within two weeks; most problems are already too old when they are arbitrated. Justice delayed may be justice diminished. Dr. Holly liked to put people back to work when the contract and testimony permitted; when he could not, the decision obviously weighed heavy with him.

In the process of collective bargaining and its application, Dr. Holly believed strongly that the set of rules and system of jurisprudence established by the parties were preferable to that established unilaterally or imposed by governmental authority. Consequently, he supported legislation that would permit labor and management to commit themselves to collective bargaining. He was always disappointed when policymakers were slow to choose the process for resolving disputes. When asked by a Tennessee governor to provide advice on how to quell a developing strike of prison guards, he quickly suggested that the governor call them in and talk with them about their demands. However, the governor found such advice unacceptable and incompatible with his authority and position. As a result, the strike continued.

Dr. Holly believed that in the public sector collective bargaining was a useful tool that could improve productivity and diminish disputes. He was impressed by the experience of the Tennessee Valley Authority in the area of public sector labor relations. Stunned by the assassination of Martin Luther King in connection with a municipal garbage strike in Memphis, he enlisted TVA's support to establish a center at Memphis State University to study solutions to such disputes and to provide training to the public participants in the bargaining and dispute resolution process.

Distinguished professors in numerous fields have buildings or scholarships named in their honor. Their learned writings are often confined to the musty bowels of libraries, gradually becoming outdated or merely a curiosity of a certain period. But Fred Holly's legacy continues. Today, across Tennessee and throughout the Southeast, the students of his careful and conscientious teaching are business and union leaders, lawyers and personnel administrators, university professors and members of the legislature. Thanks to Fred Holly, these disciples are still making professional labor management relations a day-to-day reality in this region.

Although Japan has traditionally learned from the West, the Japanese industrial relations system is now so distinctly different that the Western world is beginning to learn from the Japanese.

Examining The Japanese Industrial Relations System

Koji Taira

When one country learns from the experience of another, a measure of creative misunderstanding is usually involved in the sense that the lessons learned do not accurately reflect foreign practices. However, the lessons can still prove useful for stimulating new approaches to the apprentice country's problems. Japan's efforts to learn from the West for more than a century have been full of such misunderstandings. Although Japan has made many successful attempts at westernization, it still remains a uniquely different country from any in the Western world.

In industrial relations, Japan has also been learning from the West, especially the United States. Yet the Japanese industrial relations system that has emerged is so distinctly different from the American system that now the Western world is beginning to learn from the Japanese.

Two aspects of Japanese industrial relations that Americans admire most are job security and harmonious union-management relations. However, American approaches to achieving those

ends need to be tempered with the realization that the Japanese culture is unique.

For example, Japanese job security is generally called "lifetime employment," and Japanese labor unions are almost always characterized as weak, docile, cooperative "company unions." Obviously, then, America's industrial relations problems cannot be solved by giving employees lifetime employment and changing unions into company unions or dissolving them altogether. Concession bargaining in search of "lifetime employment" in this country could eventually lead unions to extinction.

There are many admirable features of Japanese industrial relations that are consistent with the work ethic, organizational loyalty, and high productivity in Japanese companies. Most of these features, however, have been brought about by efforts on the part of management, unions, employees, and the government in the course of far-reaching legal, political, and social reforms. In short, the entire society has worked to create good industrial relations from initially poor conditions.

Many excellent Japanese companies today (those which are already or are fast becoming household names in the United States) suffered from interminable battles with labor unions from the end of World War II until around 1960. During this period, unions and management hurt each other enough to realize finally that between them they had the power to reduce negotiating to a negative-sum outcome. After those years, industrial relations improved significantly.

The Union's Role in Management Modernization

Japanese management was not excellent to begin with. In fact, it has been pushed, shoved, and often beaten into better behavior and performance. Labor unions, part of the disciplinary forces that have helped improve management, are held in high esteem by many respectable Japanese leaders principally because they are a Western

Concession bargaining in search of lifetime employment in this country could eventually lead unions to extinction.

institution. It is difficult for Americans to imagine a social climate where unions are respected in this way.

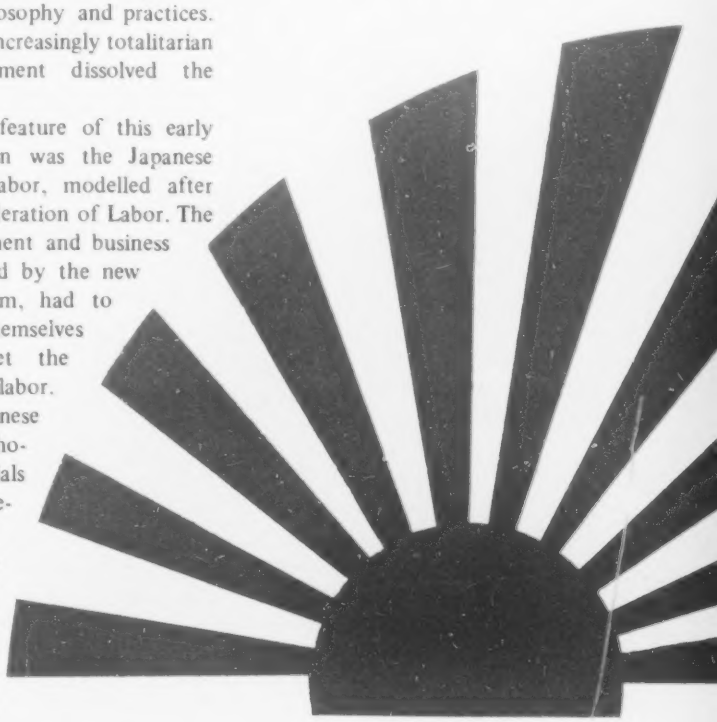
Toward the end of the nineteenth century the earliest Japanese unions were organized by some of the most modernized men of the day – those who had worked in America under the personal tutelage of Samuel Gompers. The ideals and objectives professed by the union movement at that time were too modern and too advanced for most Japanese. The absolutist imperial government of Japan, whose supreme objective was economic development to strengthen the nation militarily, considered the union movement subversive and crushed it.[1]

Early Labor Organizations

The second wave of unionism, during World War I, achieved moderate success and had considerable impact on management philosophy and practices. But in 1940 the increasingly totalitarian Japanese government dissolved the movement.

The central feature of this early labor organization was the Japanese Federation of Labor, modelled after the American Federation of Labor. The Japanese government and business leaders, frightened by the new wave of unionism, had to modernize themselves quickly to meet the challenge of labor. Teams of Japanese businessmen, scholars, and officials travelled extensively in the United States and Europe in the early 1920s. When they returned to Japan, they had been greatly influenced by the American Plan and European work councils. Philosophically, it was out of character for arrogant and autocratic Japanese men of power and wealth to consider sitting down with their employees (no better than servants in their view at the time) to discuss employment-related matters, as was the practice in America and Europe. To these Japanese, the American idea of employee representation was probably as shocking as the Japanese consultation system is to today's American managers.[2]

The third wave of unionism, which continues to this day, arose after World War II during the American Occupation of Japan, led by General Douglas MacArthur. The Supreme Commander "ennobled" labor unions as knights of democracy, while disgracing

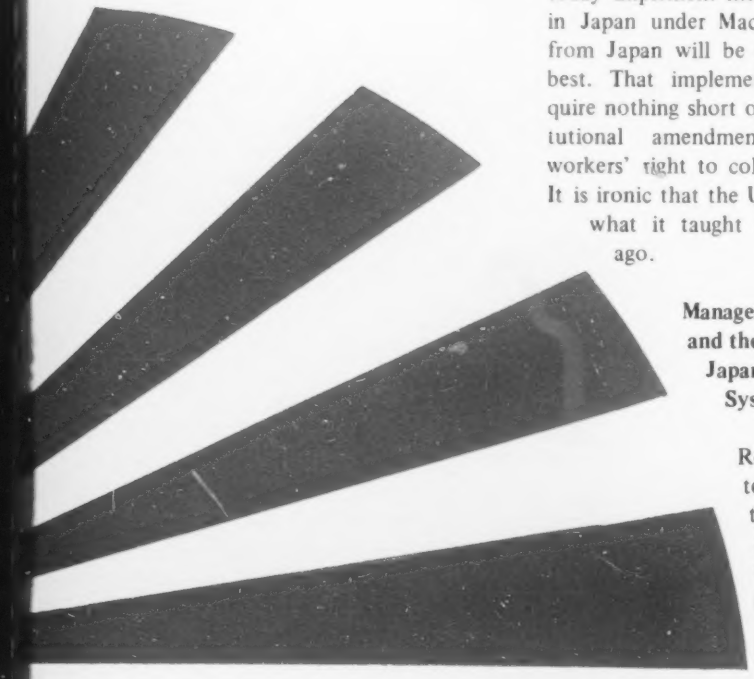


The MacArthur resolution . . . resulted in the generation of a new type of businessman who could make creative responses to . . . democracy in the new Japan.

the business community through trust busting, forced retirement of wartime business leaders, and prohibition of business groupings. Labor unions of any kind were positively encouraged (even Communists "fellow-travelled" with MacArthur for a while). MacArthur also wrote into the new Constitution of Japan a provision guaranteeing "the right of workers to organize and to bargain and act collectively" (Article 28). Collective bargaining thus became a constitutional right to be respected and upheld by the Emperor or the Regent as well as Ministers of State (Article 99).

Collective bargaining as a constitutional right, along with the bill of all other rights, is a far cry from the American justification of labor laws by the "Commerce Clause" in the Constitution. American labor laws "regulate" industrial relations to prevent the deterioration and disruption of "interstate commerce." On the other hand, Japanese labor laws "implement and promote" the constitutionally guaranteed right of collective bargaining. One version of labor laws under MacArthur was the Labor Union Law modelled in part after the Wagner Act, in which only the employer was held liable for unfair labor practices. The Constitution and the Labor Union Law thus implied that the unions in Japan were faultless. Japanese labor jurisprudence operated on that basis for many years after World War II. The pro-labor bias of the law is still a reality in Japan today.[3]

Thus began an unprecedented experiment in industrial relations in postwar Japan, governed by the United States through MacArthur. It is the current theory that unless Americans today implement the theories practiced in Japan under MacArthur, education from Japan will be only superficial at best. That implementation would require nothing short of a positive constitutional amendment to guarantee workers' right to collective bargaining! It is ironic that the U.S. cannot relearn what it taught Japan forty years ago.



Management Responses and the Rise of the Japanese Employment System

The MacArthur Revolution, a disaster to conventional types of businessmen, resulted in the generation of a new type of businessman who could make creative responses to the requirements of democracy of the New Japan. Businesses had to abide by the new rules of collective bargaining and devise a management system which, nevertheless, would be productive and profitable. The mass exodus of wartime business leaders called for a new generation of "democratic businessmen." A group of younger managers and executives rose to the challenge. The group was called *Doyukai*, best known today as the Japanese Committee for Economic Development, which is equivalent to the American CED. The Japanese CED worked out a new ideology by which it hoped to restore the dignity and autonomy of the once disgraced business community by working with the newly empowered labor unions for the common goal of higher productivity for the national economy and individual enterprises. The slogan was a "Revised Capitalism." At first it was difficult for the radicalized unions of the day to accept the new ideology, which, after all, did represent capitalism.

At the enterprise level, frantic efforts for the modernization of management and technology took place. Industrial relations were abysmally bad, and productivity after the devastation of the war was equally poor. The temper of the times held management responsible for whatever went wrong with business. Following the Japanese tradition of learning from the West, thousands of Japanese students, scholars, businessmen, labor unionists, and officials visited the United States in the 1950s and 1960s to learn various technologies, management techniques, and industrial relations strategies.

Confronted with the industrial might of the United States (which seemed unchallengeable at the time), even the most radical unionists agreed on one thing: the top priority of the day was a more productive, efficient, and prosperous Japan. It is said that former adversaries returning to Japan aboard the same planes or ships, embraced each other and pledged maximum cooperation for a better Japan. Cries for "Catch Up With the West; First Europe and Then America!" arose from

Koji Taira

all over Japan, and political leadership responded enthusiastically to the popular demand. In 1960, the Japanese government of the conservative Liberal Democratic Party adopted an Income Doubling Plan, and the Japanese economy entered the age of "miracle growth," expanding at annual rates exceeding 10 percent from 1960 to 1973, when the OPEC shock finally brought the hitherto unstoppable growth to a temporary halt and after that, to a period of slower growth.

Japan's Economic Emergence

The outcome of that period of cooperation is exciting: Japan emerged as number one.[4] At the enterprise level, less exciting, all-too-human conflicts continued. From the management point of view, the principal question of work force management was how to stabilize industrial relations, or, how to tame unions and reassert management prerogatives. Given the pro-union legal and social climate, management leadership in the enterprise had to be secured in ways consistent with the dignity and autonomy of the union. This meant accepting and trusting the union as a business partner while sharing responsibility for the productivity and profitability of the enterprise.

The democratization of the enterprise and of Japan at large that had been attained during the seven years of the Occupation and a few years following had left only one choice to management as a viable strategy: democratic leadership. The formerly absolute ownership rights of share holders had been curtailed, and the job rights of the employees enhanced. A new view of the firm, somewhat different from a "capitalist" theory of it, was needed. In due course, an "organizational" theory of the firm emerged,[5] elevating the permanence and viability of the firm to the highest and most compelling requirements for which management was granted the privilege to lead through coordination and integration. Long before this "organizational" theory became popular, Japanese management began to operate in that way.

The social democratic revolution within the enterprise made everyone working in it an equal member with equal voice concerning how the business should be run and how the fruit of collective endeavors should be distributed. This was a revolution in that an employee sweeping the factory floor was in principle equal to the company chairman in terms of involvement in the company. Social distance, which divided managers and employees, disappeared. Educational and functional differences carried differential economic rewards, to be sure, but not privileges of the kind that would result from stratification. Status equalization was consciously promoted by access to such visible aspects of life as canteens, toilets, parking lots, badges, uniforms, etc.

Lifetime Employment

The requirements of social equality, consistent with the need for functional differentiation, were met by lifetime employment and age-based rank order among company personnel. It is within this context that lifetime employment makes sense. But it is this aspect of Japan's lifetime employment that is liable to the greatest misunderstanding in America.

The management of lifetime employment starts with the management of hiring, which is the most important aspect of the Japanese employment system. The company looks for, screens, and employs young workers of the same age and same educational level who resemble one another as closely as possible in a maximum conceivable range of personal qualities.[6] In practice this means that the company hires the desired number of new employees upon their graduation from school or college, before they have been influenced by real-life experiences. These employees are then trained, assigned, rotated among all the jobs in the company, promoted through a system of jobs and positions, and retired at a stipulated age (55 until recently, but 60 in an increasing number of firms since). If this kind of hiring is done from a given list of schools and colleges year in and year out, there will emerge a neat personnel structure in which

experience, skills, positions, salaries, and privileges appear to be graded and allocated by age. Lifetime employment and age-based rank order are accomplished simultaneously. The differences in the length of service determine positions, pay, and responsibility, but no one begrudges one's senior in age (who was also one's senior in school) holding a better job at better pay. Interpersonal conflict is minimized, and solidarity of the employees is ensured, similar to the student body of a well-run school or college.

The union of employees is both fiercely loyal to the enterprise and potentially militant with respect to perceived injustice. Fortunately, managers and executives of the company are also former union members, since the membership rule requires that everyone, regardless of his designated job, belongs to the enterprise union until promoted to management ranks. Thus, collective bargaining takes place between current and former members of the union. Demonstration of leadership in the union often becomes a favorable factor for promotion to a managerial position; therefore, the organization maximizes opportunities for leadership qualities. Early on, the Japanese narrowed down the scope of collective bargaining mainly to wages, especially annual pay raises. All other bargainable issues are taken care of by joint management/union consultations. The difference between collective bargaining and joint consultation is that an impasse in collective bargaining can be broken by a strike, while the cure for an impasse in consultation is *more* consultation. However, when extensive consultation appears to be ineffective, the union can declare that the issue at hand be made bargainable and can thus call a strike to break the impasse.

The lifetime employment described here is not universal. It requires a large firm with jobs numerous enough to offer long ladders of promotion. Unionism also requires some critical mass to be viable, inasmuch as it is basically a safeguard against organizational deficiencies, erratic work rules, and unfair reward systems. At present, the membership of all labor unions is a little less than 30 percent of the paid labor force, which roughly corresponds to the extent of public-sector employees and those in larger private enterprises.

The secret of lifetime employment is to limit the scope to the absolute minimum number of employees who can be retained, regardless of business ups and downs, and to meet the changing needs of manpower with temporary help.

Americans may wonder how firms in the organized sector, with the apparently rigid workforce employed "for life," can meet short-run fluctuations in business conditions. The secret is to limit the scope of lifetime employment to the absolute minimum number of employees who can be retained, regardless of business ups and downs, and to meet the changing needs of manpower by temporary help that can be increased or decreased at will from time to time.

Conclusion

Economics is a controlling factor in the viability of any institution. Japan's lifetime employment and enterprise unionism apparently work well, because they were responses to the problems and constraints that Japanese firms and employees faced at a certain historical stage of economic development. The unique character of these problems and constraints – transition from autocracy to democracy, repair of a war-ravaged economy, and the race to catch up with the West, etc. – perhaps cautions against an undue optimism about adopting lifetime employment and enterprise unionism and making them work in America. However, history has illustrated that an exchange of ideas across cultures, despite some misunderstandings, can prove to be a profitable venture.

1. Koji Taira, *Economic Development and the Labor Market in Japan* (New York: Columbia University Press, 1970.)
2. Robert E. Cole, *Work, Mobility, and Participation* (Los Angeles: University of California Press, 1979.)
3. William B. Gould, *Japan's Reshaping of American Labor Law* (Cambridge, Mass: MIT Press, 1984); and Taishiro Shirai, ed., *Contemporary Industrial Relations in Japan* (Madison, Wisconsin: University of Wisconsin Press, 1983).
4. Ezra F. Vogel, *Japan as Number One* (New York: Harpers, 1979).
5. Masahiko Aoki, ed., *The Economic Analysis of the Japanese Firm* (New York: North Holland, 1984).
6. M. Bronfenbrenner, "An Essay on Negative Screening," In *Economic Policy and Development: New Perspectives*, edited by Toshio Shishido and Ryuzo Sato (London: Croom Helm, Ltd., 1985).

In the last 10 years, union membership has dropped dramatically. Changes in the structure of the economy and labor force may account for some decline, but there is no easy answer.

Where Have All The Unions Gone?

Donald E. Cullen

American unions are in deep trouble. From its peak of 22.2 million in 1975, union membership has dropped to about 18 million in 1986.[1] And, compared to the 80 percent they averaged in the 1940s, unions are now winning fewer than 50 percent of representation elections.[2] Measured as a share of nonfarm employment, membership shows an even more severe and prolonged decline – from a high of 33 percent in 1953 to 19 percent in 1984, about the same share as in the late 1930s.[3]

What happened? Where have all the union members gone? Surely not *all* U.S. industry has moved overseas or south of the Mason-Dixon line, although it sometimes looks that way to union organizers in the North. And does it really matter whether a firm locates in the North or South? After all, the Tennessee Valley Authority has been unionized for decades, and the recent Saturn labor contracts – in which General Motors agreed that union workers will both construct and operate its huge new plant in Spring Hill, Tennessee – have been widely hailed in union circles (as well as being vigorously denounced in some employer circles).

This article surveys current thinking among industrial relations specialists on such questions, that is, on the reasons for the sharp decline in union strength in recent years. Although it would be an exaggeration to say there are as many explanations for that decline as there are experts on the subject, the reader will see that there is no easy answer to the question of where all the union members have gone.

Structural Changes

Explanations proposed for the decline in union strength fall into four categories: changes in the structure of the economy and the labor force; changes in management practices, changes in public policy; and a lack of change in union practices.

The first category refers to structural changes that are familiar to most people. The goods-producing industries in which unions have been particularly strong since the 1930s – manufacturing, mining, and construction – have accounted for a dwindling share of all jobs in the country as we have moved toward today's service-oriented economy. A similar and related shift has occurred in the occupational structure of the labor force as blue-collar jobs, the traditional base of most unions, have become outnumbered by white-collar jobs. Intensifying the effect of these changes has been the shift of many jobs, both blue- and white-collar, from the strongly unionized North and Midwest to the weakly unionized South and Southwest.

Workers, as well as jobs, have changed over the last few decades. The labor force today, when compared to that of the 1930-1950 period, is on average better educated and contains a higher proportion of women and minorities. In addition, the baby-boom generation hit the labor market in the mid-1960s. It is reasonable to expect that all these shifts have worked against unions.

Union membership, for example, has long been concentrated among the less educated members of the labor force, a relationship obviously linked to union concentration among the holders of blue-collar jobs. Also, neither women nor minority workers have had much reason to look to unions to champion their causes. Given the industries and occupations in which unions have been strongest, union ranks have long been predominantly male and have often given short shrift to the interests of women workers. Most women, after all,

were assumed to be "secondary wage earners" and thus not sufficiently committed to a job to be interested in joining a union. Nor, with some notable exceptions, have unions treated minority members much better than have other institutions in our society. As for the baby boomers, union officials shared society's impression that young adults of the 1960s and '70s were hopelessly individualistic and opposed to all established institutions, whether union, company, or government.

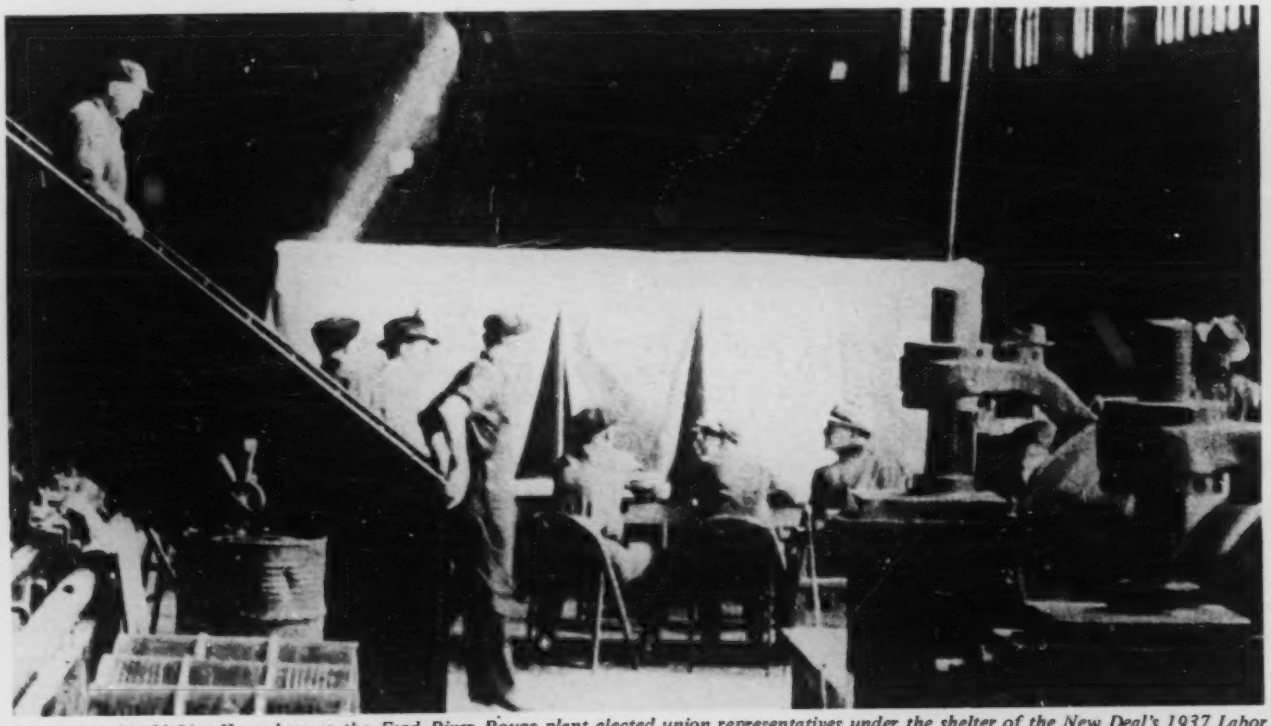
Recent research confirms that some of these structural factors have indeed been a significant source of union decline. One study estimates, for example, that of the drop in the union share of the labor force from the mid-1950s to 1978, about 40 percent resulted from the trends toward more women workers and more workers in nonmanufacturing industries, white-collar occupations, and the South.[4] It is also suggestive that unions recently have been losing ground in Great Britain, France, Italy, and the Netherlands.[5] Although those countries have laws and labor movements and employer organizations very different from those in the United States, all have experienced a decline in blue-collar jobs and a related decline in unionism.

Areas of Strength

But why have these structural factors not accounted for an even larger share of the decline in unionization? A major reason is that unions, for all their recent failures on the organizing front, have been surprisingly successful in organizing certain nonmanufacturing industries and white-collar occupations. Before the 1960s, government employees were weakly organized and appeared destined to remain so for obvious reasons: they worked in a service industry, often in white-collar jobs, and a high proportion were women. Today that public sector, which accounts for nearly one of every six jobs in the economy, is twice as strongly unionized as the private sector. In 1984, 33 percent of government employees were union members, compared to 17 percent of private-sector employees.[6] The reasons for that remarkable turnabout in the 1960s and 1970s are still a subject of debate, but the results include the fact that the third largest union in the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) today is the American Federation of State, County, and Municipal Employees (AFSCME).

Another union that has grown in recent years is the Service Employees International Union, one of several that has organized in the expanding health services industry. Both the public sector and the health services industry (which spans the public and private sectors) employ a high proportion of professionals, such as teachers and nurses, who were long assumed to be resistant to unionism. Yet, among the major occupations, the share of union members has recently grown significantly *only* in "professional, technical, and kindred workers," in which the membership share rose from about 13 percent in 1973 to about 22 percent in 1981.[7]

Other evidence shows the hazards of generalizing about the types of workers likely to embrace or oppose unionism. In 1977, for example, a



Just before World War II workers at the Ford River Rouge plant elected union representatives under the shelter of the New Deal's 1937 Labor Relations Act.

It is clearly incorrect to attribute the lion's share of the decline in popularity of unionism to the collapse of the smokestack industries, the flight of industry to the Sun Belt, or the increasing number of white collar and women workers.

national sample of nonunion workers were asked, "If an election were held with secret ballots [at your workplace], would you vote for or against having a union or employee association represent you?" Thirty-three percent of the total sampled said they would vote for a union. The breakdown of those in favor was as follows: 28 percent of white-collar workers, 39 percent of blue-collar workers, 35 percent of Southerners, 40 percent of women, and 67 percent of black and other minority workers. As one might expect, those workers most inclined to favor unions were those most dissatisfied with the wages, fringe benefits, and working conditions on their jobs.

When job satisfaction was held constant, however, the only demographic characteristic that remained consistently significant was race: nonwhite workers were still much more willing than white workers to vote for a union. But women workers were as willing (or unwilling) as men to vote for union representation; younger workers as willing as older workers; the more educated as willing as the less educated; white-collar workers in the country, as a whole, as willing as blue-collar workers; and blue-collar workers in the South as willing as blue-collar workers in the Northeast. (White-collar workers in the South were, however, significantly less likely to vote for a union than white-collar workers in the Northeast.)[8]

What people say they would do in a given situation may be quite different, of course, from what they actually do when that situation arises. Yet, studies of voting behavior in National Labor Relations Board (NLRB) representation elections have largely confirmed the results of the above attitude survey. A 1983 review of such studies found that nearly every study that measured voters' job satisfaction had found, as expected, that dissatisfied workers were far more likely to have voted for a union than satisfied workers. Demographic characteristics such as gender, age, education, and residence in the South, however, showed little or no relationship to voting behavior.[9]

In summary, the many changes that have occurred in the structure of the economy and of the labor force since the 1940s have certainly accounted for *some* of the decline in the popularity of unionism. Yet, it is clearly incorrect to attribute the lion's share of that decline to the collapse of the smokestack industries, or the flight of industry to the Sun Belt, or the increasing number of white-collar and women workers. Obviously, something else has also been going on.

The Industrial Workers of the World believed that only by building "one big union" could the workers of the world combine to overthrow the management class.

Changes in Management Practices

In stressing the effects of broad trends in the economy, some observers overlook the critical role of the "players" in the organizing contest – the employers, unions, and government. Of those three groups, employers appear to have changed their game plan most radically in recent years.

To oversimplify, employers have become increasingly sophisticated in applying both the soft and hard approaches to union avoidance. The soft approach calls for a concerted attempt to increase workers' job satisfaction through methods such as paying good wages and benefits and providing job security and "enlightened" personnel procedures. In principle, there is nothing new about this approach, which, under the banner of the American Plan, was adopted as an anti-union strategy in the 1920s. Companies such as IBM and Eastman Kodak have long remained nonunion by practicing a high level of what unions call paternalism and what those companies call good management.

Today many employers have added a new ingredient to this soft approach: employee participation in job decisions. The rallying cry in many employers' circles seems to have become, "If you can't lick the Japanese, join them."

A recent study showed that from 1977 to 1983 the number of workers represented by various unions declined by nearly 1,000 in the average firm in the sample.

Thus, employers who shudder at the thought of union participation in management affairs now rush to experiment with plans associated with Japanese-style management, such as quality circles, that encourage individual employees to share in decisions concerning work flow, job duties, worker assignments, and even product design. Employers do not adopt such plans simply to avoid unions. Many managers and academicians, and even some union officials, believe that these plans can dramatically improve productivity under the right circumstances. But if those plans simultaneously increase workers' satisfaction with their jobs, as many advocates believe they do, then common sense, as well as the results of studies cited above, suggests that union organizers will meet a chilly reception from workers involved in such plans.

On the other hand, many employers appear to have been applying the tough approach to union avoidance with a new degree of zeal and sophistication. Few employers have ever welcomed a union with open arms, of course, and the early history of unionism in this country is filled with chilling stories of the blacklistings, beatings, and even shootings of union sympathizers. In the more civilized period since World War II, employers' tough anti-union tactics have centered on firing or otherwise discriminating against union activists offering inducements (unions call them "bribes") to other workers to remain nonunion, spying on union meetings, closing or moving plants to avoid unionism, and challenging NLRB election procedures and outcomes at every turn.

In the eyes of many people, the undisputed champion of this approach for many years was J.P. Stevens, the southern textile company that successfully resisted union organizing drives for 17 years, beginning in 1963. During that period, the company lost 22 of 23 NLRB cases, each involving many allegations of illegal management practices. The company appealed several of the NLRB decisions and in most cases not only lost the appeal but also drew three contempt citations for violating court orders. The company paid over $1 million in back pay and other settlements ordered by the NLRB and federal courts, and was the target of a nationwide AFL-CIO consumer boycott from 1976 to 1980. Even when the Amalgamated Clothing and Textile Workers Union finally won its first contract with Stevens in 1980, those contracts covered only 10 percent of the company's union-eligible workers.[10]

The Role of Management Consultants

So, what is new about employer hostility to union organization? Union representatives and others say that several changes have occurred. First, the past 20 years have witnessed a large increase in the number of management consultants – mostly lawyers, but also nonlawyers who specialize in helping employers maintain a "union-free environment." No one knows how many of these consultants there are, but union officials say consultants have been active in a majority of organizing campaigns in recent years.

The consultants insist there is nothing sinister about their operations. They say they simply show employers how to run an effective company campaign within the law – how to answer union charges against the company, how to present to workers the disadvantages of unionism, how to respond to picket lines and other demonstrations, how to train supervisors on what they can and cannot say and do, and similar campaign tactics that are perfectly legal but unfamiliar to an employer who has never experienced an organizing campaign and knows little of the complexities of the National Labor Relations Act (NLRA). Union critics remain unconvinced, however, and charge that many consultants encourage their clients to violate both the spirit and letter of labor law.

Whatever the reason, union representatives and others argue, there is plentiful evidence of an increase in employer lawlessness in recent years. In a major article appearing in 1983, Paul Weiler of the Harvard Law School summarized some of the evidence as follows:

> Perhaps the most remarkable phenomenon in the representation process in the past quarter-century has been an astronomical increase in unfair labor practices by employers.... From 1957 to 1965, unfair labor practice charges against em-

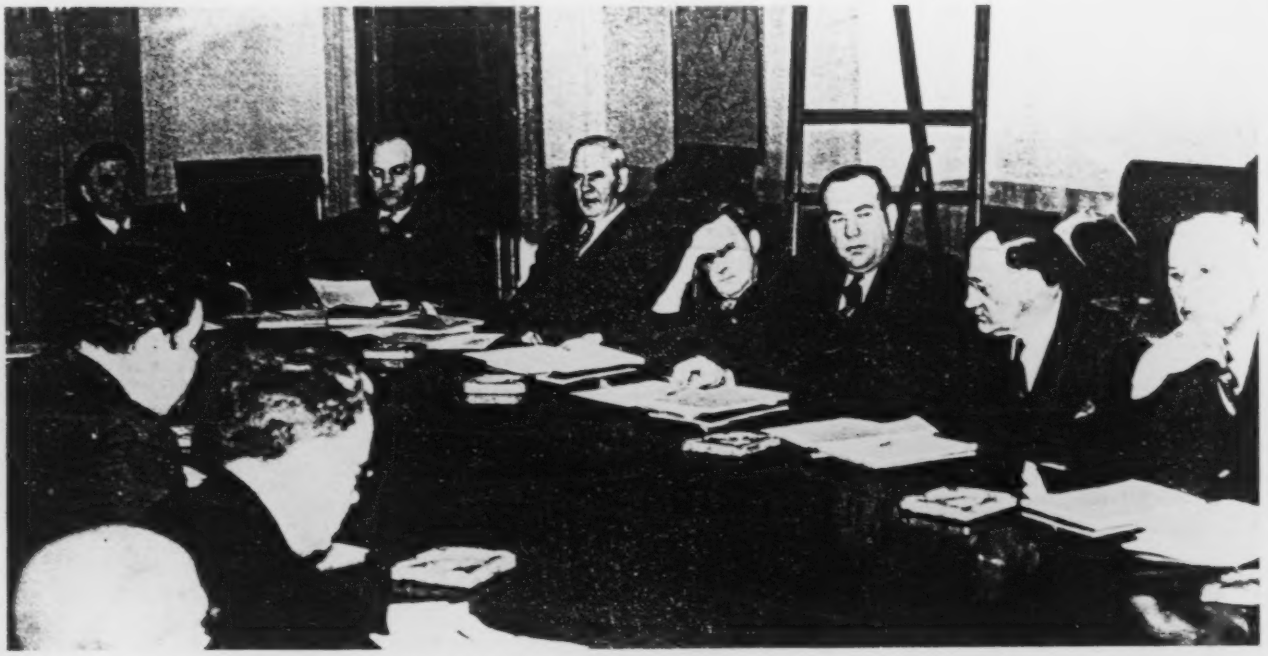
ployers increased by 200%, while the number of certification elections increased by only 50%. By 1980, the number of certification elections had declined slightly, but unfair labor practice charges against employers were up another 200% from 1965, and fully 750% from 1957. [Also, the share of those charges found meritorious by the NLRB increased from 21% in 1958 to 39% in 1980.] Worse, employees entitled to reinstatement in 1980 numbered 10,033, a 1,000% increase from the low point in 1957....

A reasonable estimate...[after making certain adjustments, is still] that about 10,000 employees were fired in 1980 for involvement in representation campaigns. One would suppose that union supporters are most at risk from such employer reprisal. Unions obtained approximately 200,000 votes in representation elections in 1980. Astoundingly, then, the current odds are about one in twenty [10,000 ÷ 200,000] that a union supporter will be fired for exercising rights supposedly guaranteed by federal law a half-century ago.[11]

In addition, the number of decertification elections, in which employees who are represented by a union vote on whether to discontinue representation, increased from about 150 a year in the mid-1950s to 902 in 1980. The union win rate in those elections declined over the same period from about 33 percent to about 25 percent. Although an employer cannot legally provoke employees to call for a decertification election, union leaders are convinced that employers (or consultants) often do so either directly or indirectly. Finally, even when unions won a certification election in the 1970s, they failed to secure an agreement in roughly one out of every four first-contract negotiations – a result, in part, of the refusal of some employers to bargain in good faith as required by the law.[12]

Although it is far more difficult to measure the effects of these management practices than of factors such as age and gender, several studies have concluded that employer tactics do have a significant impact on the extent of unionism. For example, a recent study analyzed survey data on labor relations practices in several hundred firms that had been partially unionized by the late 1970s. The analysis showed that from 1977 to 1983 the number of workers represented by unions declined by nearly 1,000 in the average firm in the sample. In a firm of equivalent size that placed a high priority on union avoidance, however, particularly by practicing employee participation and information sharing by management in both its union and nonunion plants, the number of workers represented by unions fell by about 2,600 over the same period. Further, the probability that a new plant would be unionized was 15 percent in the average firm but less than 1 percent in the firms stressing union avoidance.[13]

A study of tough employer tactics concluded in part:



In December 1941 labor leaders met in Washington to strive for wartime unity. Clockwise from upper left are John L. Lewis, Joseph Curran, Phillip Murray, Julius Emspak, R. J. Thomas, Emil Rieve, and William Green, president of AFL.

> From 1950 to 1980, when unfair labor practices per election increased sixfold, we... estimate that the rise in management opposition explains from over a quarter to nearly half of the decline in union success in organizing through NLRB elections. Put differently, had employer opposition to unionism remained at 1950 levels, our calculations suggest that unions would have organized about twice the proportion of the unorganized in 1980 as they in fact did.[14]

Changes in Public Policy

The adoption of the "pro-union" Wagner Act in 1935 certainly helped unions organize workers in the private sector at that time, just as in the 1960s adoption of similar state laws and the issuance of presidential executive orders at the federal level helped union organization in the public sector. It is therefore reasonable to suspect that "anti-union" swings in public policy have had a chilling effect on union organizing efforts.

Unions today denounce "the Reagan NLRB" as a major cause of their troubles, and it is true that the current Board has issued a number of decisions that are distinctly more favorable to employers than to unions. The difficulty with that explanation of unions' problems in organizing is, of course, that those problems (as measured by the decline in the union win rate in NLRB elections or the decline in the unionized share of the labor force) began at least 30 years ago. Also, most knowledgeable observers agree that the NLRB, whose members have only short-term appointments, has always reflected to some extent the leanings of the administration in office. Thus, employers inveighed against the Kennedy and Carter Boards as vigorously as unions now attack the Reagan Board.

Klein and Wanger have recently proposed an interesting variation on that argument.[15] Many lawyers would agree with these authors that the Taft-Hartley amendments to the NLRA, adopted in 1947, provided employers with more effective weapons to combat organizing drives than they had under the Wagner Act, particularly Taft-Hartley's provisions strengthening employers' "free speech" rights (to tell workers why they should vote against union representation) and limiting the NLRB's discretion to determine election units in a manner favorable to unions. Klein and Wanger argue further that most employers did not have the confidence to exploit their new privileges until the election of President Eisenhower in 1952 confirmed the postwar shift in political

The AFL and CIO were merged at the end of 1955 after two decades of rivalry. George Meany of AFL and Walter Reuther of CIO raise their arms in a sign of victory.

Tennessee and 19 other states adopted right-to-work laws, mostly in the 1940s and 1950s, and union advocates charge that these laws are a prime reason for unions having captured a smaller share of the labor force in those states.

mood. Then, in this view, the Eisenhower NLRB handed down rulings favorable to employers, and thus began the escalation in the mid-1950s of employer violations of the law – an escalation that was not halted even by later Democratic NLRBs.

Right-to-Work Laws

Another controversial provision of the Taft-Hartley Act permits states to enact right-to-work (RTW) laws – laws that prohibit union-management contracts to require workers, as a condition of employment, to join a union or pay dues and fees to a union. Tennessee and 19 other states, primarily in the South and Southwest, adopted such laws, mostly in the 1940s and 1950s, and union advocates charge that these laws are a prime reason for unions having captured a smaller share of the labor force in those states than in most non-RTW states.

In the abstract, the issue can be argued either way. On the one hand, RTW laws should have no effect on union organizing, since those laws take effect only *after* a union has won recognition and is bargaining with an employer over the terms of the contract. Further, most RTW states had been considered politically conservative and not receptive to unionism long before Taft-Hartley. Therefore, RTW laws may well be an effect, rather than a cause, of anti-union sentiment and behavior. On the other hand, these RTW laws directly reduce the number of union members and may thus indirectly undermine union organizing. In other words, such laws virtually guarantee that a smaller proportion of workers covered by union contracts will join a union in RTW states than in states that permit compulsory membership clauses. This lower rate of membership means less dues income for unions to spend on all their activities, including organizing. Empirical studies have failed to resolve this debate, although most have concluded that the effects of RTW laws on union membership (and also on wages and industry location) have been more symbolic than substantive.[16]

Finally, some observers have argued that, ironically, unions have become the victims of the welfare-state legislation they have long championed. This argument assumes that workers have felt that the need for union protection has decreased as federal and state governments have taken on obligations such as providing workers with income when they are sick, injured, or retired; eliminating job conditions that threaten worker safety and health; establishing minimum wages and overtime penalty rates; protecting the integrity of private pension plans; and guaranteeing civil rights on as well as off the job.

No studies have yet attempted to document this hypothesis concerning the perils of benevolence, but one can hardly blame union leaders, when confronted with this argument, for feeling they cannot win for losing. Is it worse for their organizing prospects today to suffer the slings and arrows of the Reagan Board or to enlist in the fight for laws requiring wages to reflect the principle of comparable worth, or laws providing nonunion workers with the right now enjoyed by union workers to appeal dismissals that violate no law but may violate a neutral authority's sense of equity?

The safe and obvious conclusion is that changes in public policy have had both positive effects on union organizing over the past 30 to 40 years (from the public-sector laws of the 1960s and probably the administration of the NLRA by Democratic NLRBs) and negative effects (from certain provisions of Taft-Hartley, probably the Republican Boards, and, less certain, perhaps from the social legislation of the New Deal and the New Frontier). The negative effects have probably outweighed the positive effects, but it would be a brave analyst who would put money on any quantitative estimate of the net effect of these several changes in public policy.

The Lack of Change in Union Practices

Finally, many critics, both inside and outside the labor movement, have long argued that unions themselves bear a large share of the responsibility for their decline. Julius Getman, a scholar who has studied many organizing campaigns, summarizes this view, with which he agrees, as follows:

> . . .labor's organizing failures have occurred because unions have been complacent, have lost their sense of mission, have assigned incompetent people to organizing, and have failed to

adopt innovative organizing tactics in response to changing conditions.

. . .the key to success for unions lies in the revitalization of the organizing process and in the careful selection and training of organizers.[17]

This argument is even more difficult to test empirically than the other arguments advanced to explain the organizing failures of unions. How does one measure the effects of differences in tactics, training, and dedication among union organizers? For his evidence, Getman relies on his years of observation of organizing campaigns and his conversations with hundreds of workers, organizers, and management representatives. Perhaps this is the best anyone can do at this time, but it is not persuasive evidence to the skeptic who wishes to see a statistical analysis of several campaigns that holds constant all the many variables, other than organizer competence, that can affect the outcome of a campaign.

Two statistical studies attempt, however, to appraise the charge that unions have shown a decreasing commitment to organizing over the postwar period. Dickens and Leonard show that the rate of organization – the number of eligible voters in NLRB elections as a percentage of all unorganized workers in the private sector – fell from 2.6 percent in 1950-54 to 1 percent in 1975-79. They argue that this decline "could be explained by a decrease in the extent and intensity of union organizing efforts or by a decreased willingness on the part of workers to join unions."[18]

Paula Voos analyzes the financial reports of 27 national unions to determine the amount of money spent on organizing over the 1953-77 period.[19] She concludes that these unions had maintained their commitment to organizing over that period because their real-dollar expenditures, both total and per organizable worker (that is, per nonunion worker in each union's jurisdiction), remained relatively constant over the years studied. Just to confuse matters, however, Freeman and Medoff reach the opposite conclusion from Voos' data, arguing persuasively that it is necessary to deflate organizing expenditures not only by the increase in prices, but also by the increase in the average wage level in order to control for the increase in the salaries of organizers. By that measure, the organizing expenditures of unions declined significantly from 1953 to 1977.[20]

In 1952 AFL Secretary-Treasurer George Meany succeeded William Green as Federation President.

An elderly worker thanks Phillip Murray for concluding a pension plan for steelworkers.

Conclusions

So, where have all the union workers gone? To repeat the litany of every social scientist: there is no simple answer to that question, and clearly more research is needed. In the meantime, a few generalizations can be offered.

First and foremost, it is important to recognize that the decline in the extent of unionism began many years ago and not with the election of President Reagan. Although the number of union members did not decline until after 1975, the better measures of union organizing success, nearly everyone agrees, are the number of union members as a percentage of the growing labor force, which peaked in the mid-1950s, and the union win rate in NLRB elections, which peaked in the mid-1940s. Any comprehensive explanation of the union decline must therefore address long-run changes.

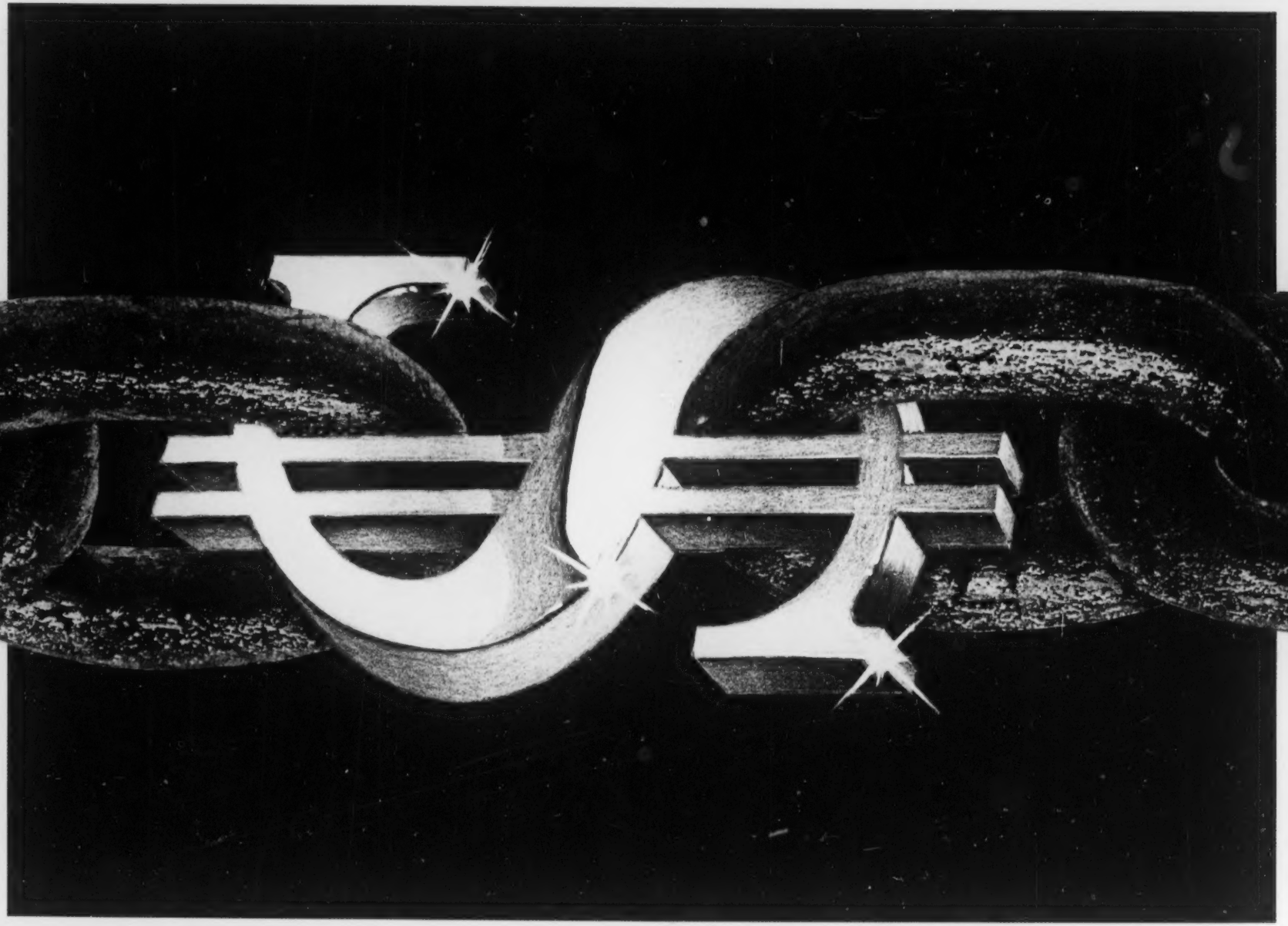
Second, too little attention has been paid to the union successes that have occurred – particularly in the public sector and in professional occupations – in the midst of the general decline in union strength. Several of the studies surveyed here, for example, analyze union trends only in the private sector, in part because the relevant data are often better for the private than the public sector. But it is a distinct possibility that many people, both experts and others, do not quite believe that unions of government employees are "real" unions to be taken seriously, like the Mine Workers or Longshoremen or Steelworkers.

If unions are to stage a comeback, however, they must do it primarily in growth industries similar to the public sector in some respects, such as health services, not in mining or longshoring or basic steel. Yet, we know very little about the causes of the remarkable spurt of union organization in the public sector in the 1960s. Certainly the passage of favorable laws helped, and also most public-sector employers were far less agressive than most private-sector employers in their opposition to union organization. But why did government employees become more receptive to unions in the 1960s, and were the tactics of public-sector organizers any different from those of organizers in the private sector? In short, does public-sector unionism provide any lessons for private-sector unionism, or are they totally different breeds?

Third, some consensus does emerge from the several studies surveyed. The changes that have occurred in the structure of American industry since the 1940s have indeed contributed to the decline in union strength, as everyone has assumed, but so too have the changes in management behavior – both its competitive and cooperative approaches to workers – and some changes in public policy. Much less certain is whether unions have contributed to their own decline, either by refusing to make necessary changes in their practices or by changing for the worse.

Finally, in some ways the most fascinating results in these studies are those concerning worker attitudes and voting behavior. When workers are compared with respect to their willingness (or unwillingness) to vote for union representation, most studies have found surprisingly few differences on the basis of age, education, gender, residence, and often occupation. After dozens of studies over the years, it is evident that we still know discouragingly little about why some workers vote for unions and others do not.

1. Leo Troy and Neil Sheflin, *Union Sourcebook: Membership, Finances, Structure, Directory* (West Orange, N.J.: Industrial Relations Data and Information Sources, 1985): Table 3.41.
2. William E. Fulmer, *Union Organizing: Management and Labor Conflict* (New York: Praeger, 1982).
3. Troy and Sheflin, Table 3.41.
4. Henry S. Farber, "The Extent of Unionization in the United States," in *Challenges and Choices Facing American Labor*, ed. Thomas A. Kochan (Cambridge, Mass.: The MIT Press, 1985), p. 22.
5. "Europe's Unions are Losing Their Grip," *Business Week* (November 26, 1984): 80-88.
6. Leo Troy and Neil Sheflin, *Union Sourcebook: Membership, Finances, Structure, Directory* (West Orange, N.J.: Industrial Relations Data and Information Sources, 1985): Table 3.91.
7. Edward C. Kokkelenberg and Donna R. Sockell, "Union Membership in the United States, 1973-81," *Industrial and Labor Relations Review* 38 (1985): 522.
8. Thomas A. Kochan, "How American Workers View Labor Unions," *Monthly Labor Review* 102 (1979): 26-28.
9. Herbert G. Heneman, III and Marcus H. Sandver, "Predicting the Outcome of Union Certification Elections: A Review of the Literature," *Industrial and Labor Relations Review* 36 (1983): 537-59.
10. "The Ripples Spreading from the Stevens Pact," *Business Week* (November 3, 1980): 107-110.
11. Paul Weiler, "Promises to Keep: Securing Workers' Rights to Self-Organization under the NLRA," *Harvard Law Review* 96 (1983): 1769-1827.
12. William N. Cooke, "The Failure to Negotiate First Contracts: Determinants of Policy Implications," *Industrial and Labor Relations Review* 38 (1985): 163-78.
13. Thomas A. Kochan, Robert B. McKersie, and John Chalykoff, "The Effects of Corporate Strategy and Workplace Innovations on Union Representation," *Industrial and Labor Relations Review* 39 (forthcoming).
14. Richard B. Freeman, "Why are Unions Faring Poorly in NLRB Representation Elections?" in *Challenges and Choices Facing American Labor*, ed. Thomas A. Kochan (Cambridge, Mass.: The MIT Press, 1985), pp. 45-63.
15. Janice A. Klein and E. David Wanger, "The Legal Setting for the Emergence of the Union Avoidance Strategy," in *Challenges and Choices Facing American Labor*, ed. Thomas A. Kochan (Cambridge, Mass.: The MIT Press, 1985), pp. 75-88.
16. William M. Moore and Robert J. Newman "The Effects of Right-To-Work Laws: A Review of the Literature," *Industrial and Labor Relations Review* 38 (1985): 571-585.
17. Julius Getman, "Ruminations on Union Organizing in the Private Sector," *The University of Chicago Law Review* 53 (1986): 45-46.
18. William T. Dickens and Jonathan S. Leonard, "Accounting for the Decline in Union Membership, 1950-80," *Industrial and Labor Relations Review* 38 (1985): 333.
19. Paula B. Voos, "Trends in Union Organizing Expenditures, 1953-1977," *Industrial and Labor Relations Review* 38 (1984): 52-63.
20. Richard B. Freeman and James L. Medoff, *What Do Unions Do* (New York: Basic Books, 1984), pp. 230-40.



If Saturn can achieve its goal of building a high volume of quality-competitive autos on a cost-competitive basis, the achievement will have profound implications for the whole of American industry.

SATURN'S STRATEGIC ROLE IN INDUSTRIAL RELATIONS

Donald Ephlin

American industry faces a competitive challenge that is approaching crisis proportions. Since the underlying problem has been festering for years, last year's merchandise trade deficit of $112 billion tells just part of the story. In part, our industries are victims of their own past success.

The postwar economic dominance of the United States, coinciding as it did with the emergence of management science as a fully developed curriculum in graduate schools of business, induced many observers here and abroad to regard American managers as invincible. The system worked to produce great wealth – wealth that was shared by union members in well-organized mass production industries – and thus, there seemed no reason to challenge the authoritarian command structure of the modern corporation.

Ironically, a countervailing theory of management was also developed after the war, but it was largely spurned in America while it was eagerly absorbed by our future competitors. As Cornell's William F. Whyte observes:

> While the ideology of worker participation was invented in the United States, in the early years these doctrines were taken much more seriously by Japanese than U.S. management.... When the Japanese read worker participation literature, many of them assumed that they were learning about programs and practices of the leading U.S. companies. Nothing could have been farther from the truth.[1]

The American automobile industry in the postwar decades provided the classic prototype of hierarchical decision making. General Motors in particular was ruled by its various top management committees, who set goals for divisions. The divisions in turn set their own committees to work until finally a directive reached the individual plant manager and his team of supervisors. At this point, discussion and deliberation came to an abrupt halt. Management was convinced that the production and skilled trades workers in the plants had nothing to offer to the success of General Motors except strong backs and hands. Naturally, the unionized workers of companies like GM resented the authoritarian style of management, and over time they responded by creating a defiant culture of their own.

An incident from history that illustrates the kind of relationship that prevailed between GM and the UAW in the 1950s occurred when the management of the St. Louis Assembly Plant insisted on scheduling overtime hours to obtain extra production for GM showrooms. Management posted extra shifts repeatedly, only to find they could not get enough people in to run the lines. Finally, in frustration, management turned to the local union leadership for guidance by suggesting that the union tell them what hours would be acceptable. The local leadership's response was, "Hell no. You just schedule 'em and we won't work 'em."

Our auto industry could perhaps afford such games in the 1950s, '60s and '70s, when U.S. producers had a virtual monopoly on the vehicle market. However, with over 30 percent of the country's new car market now supplied by imports, and with that share expected to top 40 percent before the end of the decade, that kind of behavior is no longer an option.

But even today, after the market gyrations and import shocks of recent years, the biggest single problem in the UAW-General Motors collective bargaining relationship is the persistence of old authoritarian attitudes and corresponding negativism on the part

The keynote of the negotiated worker participation programs has been to change the self-concept of both management and worker, as well as to change the relationship between the parties for the common good.

of workers. In many GM plants, management still refuses to share information with workers or involve worker representatives in decision making of any consequence. In such situations, as one would expect, workers remain unconvinced of the need to change or to adapt to changing conditions.

The Team Concept

Carnegie-Mellon Professor Herbert A. Simon states the kind of challenge faced by GM and the UAW as succinctly as anyone:

> Employees who are informed and consulted can usually be expected to work more effectively and with more enthusiasm than those who are not, and to contribute important elements of expertness to the decision-making process.[2]

However, the picture is far from uniformly bleak, as recent years have witnessed important incremental progress in redefining the UAW-GM relationship. A significant number of UAW local unions at GM plants around the country have participated fully in preparations for new product launches. Since these launches involved not only new "hard" technology, but also new production systems requiring new skills and methods of working, it is essential that UAW people be involved in designing and implementing the worker retraining process that accompanies the launch. There are also several GM locations where workers have successfully adapted the "team concept" approach that is widely used in Japanese auto plants and that is a central element in the production system employed by New United Motor, the GM-Toyota joint venture in Fremont, California.

Under the team concept, 10 to 15 workers at a particular work station operate as a team monitoring their own work pace and quality. The team members can also rotate jobs and frequently earn an extra premium for learning other jobs under an approach known as "pay-for-knowledge."

There has also been considerable progress within the plants on refocusing the Quality of Worklife (QWL) program which has been available to local unions since 1973. In the early 1980s, there had been some instances where QWL was not truly a joint program – where management had sought to impose the program as a lever for productivity or quality goals. However, the GM Department of the International Union has now, for the most part, eliminated such abuses to insure that the program fulfills its mandate to improve the quality of working life for all members.

Changing the Concepts

The keynote of each of the negotiated worker participation programs has been to change the self-concept of both management and worker, as well as to change the relationship between the parties for the common good. For workers, this has meant strengthening their actual capabilities, along with reinforcing their self-worth and sense of "ownership" in the process. For management, it has meant learning to think of production and skilled-trades workers as a capable, valuable resource, rather than as simply a fixed cost of production. The end result, where the process has been successful, is a relationship marked by mutual respect, encouragement, and confidence.

A good indication of this move toward "jointness" was embodied in the 1984 National Agreement between General Motors and the UAW. The agreement expanded joint activities in a number of existing areas, including worker education and training, health and safety, and the various employee-assistance programs which help workers deal with personal problems. But most importantly, the agreement broke new ground in creating new roles for workers literally to help "run the business" along with management.

Under a new "job opportunity bank" security system, workers who formerly would have been subject to layoff as a result of product outsourcing, negotiated productivity improvements, the introduction of new technology, or the consolidation of component manufacturing are now retained with full pay and benefits as they enter a job bank for retraining or redeployment within the GM system. As part of the job bank operation, local union representatives not only help to design the training programs, they also meet and talk with local management on how a particular operation might be modified to keep members working or re-employ members currently in the job bank. On the national level, UAW representatives also meet with management counterparts to plan new business ventures to be financed by a negotiated fund of up to $100 million.

As these examples indicate, GM and the UAW have accomplished a great deal both locally and nationally by way of redefining their relationship. Saturn, however, will represent an even higher plateau in the evolving relationship between workers and managers in the U.S. auto industry. Every element at Saturn – from the design of the product itself, to the design and tooling for the manufacturing complex, and finally to the design of the labor relations system – is the result of a "clean sheet" approach to auto manufacturing.

For over a year before the decision to proceed with Saturn was announced by GM, UAW members and staff from every level of the union were involved in joint study teams which traveled the globe in search of good manufacturing ideas. This effort paved the way for an unprecedented level of worker and union participation in decision making once the Saturn complex in Tennessee becomes operational.

The Participatory Role

The preliminary agreement between the UAW and Saturn Corporation projects this new participatory role for workers and the union in a number of areas. For example, the agreement abolishes artificial distinctions between managers and workers with respect to parking privileges, dining areas, etc. There will be no time clocks, and UAW members at Saturn will be paid in the form of salaries. All decisions at Saturn will be made by consensus, not only within the individual work unit, but within clusters of such units, within larger business units, within plants (there will be several distinct plants in the overall complex), and within the corporation itself.

Because sound decisions can be made only on the basis of sound information, workers and their union at Saturn will have total access to information, including information on such previously sacrosanct matters as production costs and profit levels.

The work force recruited to operate the Saturn complex will be a highly motivated group for a number of reasons. Not only will the unusual level of worker autonomy and decision making be appealing, but UAW-GM members who elect to take jobs at Saturn will enjoy automatic permanent job security. Others who may be hired from outside the UAW-GM pool can also acquire permanent job security on the basis of seniority, and anyone who acquires it can never be laid off regardless of later shrinkage in the work force.

Saturn workers will also receive pay and benefits equivalent to those enjoyed by UAW-GM members, except that after one year of commercial production has elapsed, a portion of the workers' pay will be geared to performance objectives, product quality, and Saturn profits. Since the goals in each of these areas will be co-determined by union representatives, there is little likelihood that workers will believe they have been "cheated" on any of the variable factors.

Finally, the Saturn labor relationship is intended as a "living" relationship, insofar as negotiations aimed at modifications in the labor agreement can be initiated at any time with proper notice. This feature will permit Saturn workers to adapt policies and procedures as the need arises, rather than being bound for three years as in a conventional plant.

Future Implications

If Saturn can now achieve its goal of building a high volume of quality-competitive autos on a cost-competitive basis, the achievement will have profound implications, not only for the UAW-General Motors relationship, but for the whole of American industry. For the immediate parties at Saturn, it will mean shattering the old hierarchical relationship and replacing it with a more rational and more democratic system of shared decision making. As Columbia University's Seymour Melman, an acerbic critic of American management styles, has written:

> If there is to be an industrial rebirth, America must turn to those who have a direct stake in making goods – production workers and engineers – for an alternative of managerialism . . . . Their talents and self-interests are indispensable for replacing management's failed institutions and ideologies.[3]

Saturn has been structured as much as possible to permit "those with a direct stake in making goods" to make decisions and contributions to the full extent of their talents and energies. And even before the complex has been built and before the wheels have started to turn, Saturn, as the joint creation of two institutional leaders – GM and the UAW, has already influenced the way America does business. For example, 1986 labor negotiations in the steel industry have focused on making steelworkers partners in decision making at the ailing steel companies. Likewise, the new report of the Carnegie Forum on Education and the Economy stresses teacher participation in setting goals and standards as the key to revitalizing the profession of teaching and thereby revitalizing our schools.

Discussions of American industry's productivity problems have for years focused on very real concerns, like our nation's low savings rate, our antiquated antitrust laws, our lack of attention to basic research, and our misplaced focus on short-term financial results, rather than long-term production and market goals. Missing from the debate, however, has been the equally critical issue of the role of workers in the production process. For too long, we have discounted the contributions workers can make toward building a better product more cheaply in a better-designed work environment. Saturn aims to change that by confirming the truth of the recent research discovery that the most successful business organizations have established "a social contract between their employees and the organization in which layoffs were considered the last, rather than the first alternative in dealing with organizational and economic change."[4]

In view of the high stakes, the Saturn Corporation hopes not only to transform the UAW-General Motors relationship, but also to reverse the rapid decline of America's manufacturing industries and help restore American competitiveness where it counts the most – in the battle for markets and jobs.

1. William F. Whyte, *Worker Participation and Ownership* (Ithaca: ILR Press, Cornell University, 1983), p. 2.
2. Herbert A. Simon, "What is Industrial Democracy," *Challenge*, January-February, 1983.
3. Seymour Melman, "Manager's Debacle," *New York Times*, November 4, 1983.
4. Jerome M. Rosow, "Organizations Must Lead and Change," *World of Work Report*, May 1981.

Recently labor has embarked upon a campaign critical of the NLRB. Yet, Congress intended the NLRA not to protect individual workers rights, but to foster free collective bargaining.

The NLRB: Providing Remedies For Labor's Ills

Peter G. Nash

Although labor often finds fault with the National Labor Relations Act (NLRA) and the National Labor Relations Board (NLRB), the Act was never intended to deal directly with individual employee rights. Rather, it was meant to foster free collective bargaining.

The NLRB was established by the 1935 Wagner Act (the National Labor Relations Act) to administer the nation's basic labor laws. Its major functions are to hold elections among petitioning employees, to determine whether a majority desires union representation, to insure that employers bargain in good faith with employee representatives, and to protect employees from certain acts by employers and unions which interfere with their rights to band together collectively or to decline collective action. The Board corrects violations of the law by remedial orders only (e.g., a wrongfully discharged employee is awarded reinstatement and back pay) but may not impose punitive measures (e.g., the Board may not fine or jail a union member or employer who violates the Labor Act).

The Labor Act

The Labor Act and the NLRB have never been friends of American management. However, organized labor has generally supported the law and the NLRB, which have made it possible for unions to organize, function, and grow in power. Over the past few years labor, in contrast to its previous support of the NLRB, has embarked upon a strident public relations campaign critical of the NLRB. This comes as a result of organized labor's declining economic power at the bargaining table due to a sharp decrease in the number of unionized workers and labor's eroding political power.

Since the onset of the Reagan administration, both labor and its media and academic and congressional supporters have argued that the so-called "Reagan Board" has forgotten that its mission is to protect employees in the workplace and has allowed an ever-growing number of anti-union employers to violate employee and union rights without just and adequate punishment. The answers, they claim, are to replace present Board members and amend the law to impose significant deterrent penalties upon violating employers.

These criticisms and suggested solutions seem to be based upon a misreading of the Labor Act and a lack of appreciation for the original intent of Congress in passing that law. Congress never intended that the major purpose of the NLRA was to protect individual employee rights, and therefore, Congress had a good reason for refusing to impose punitive remedies against Labor Act violators.

However protected individual rights may be under Title VII of the Civil Rights Act, the Occupational Safety and Health Act, the Fair Labor Standards Act, and scores of other statutes and common law doctrines, the Act could not be clearer on its intentions.

In Section 1, the Act declares that the Board's policy is to encourage the practice and procedure of collective bargaining by protecting workers' rights to freedom of association, self-organization, and designation of representatives. Furthermore, Section 7 grants employees the right to self-organization; to form, join or assist labor organizations; to bargain collectively; and to engage in other concerted activities for the purpose of collective bargaining. Other sections of the law prohibit employers from interfering with those listed rights of employees to engage in concerted actions, but do not protect individuals from general mistreatment by their employers or unions.

History explains why this act is so myopic. During the nineteenth and early twentieth centuries, employees were unable to deal equally with their employers. As a result, employees banded together to improve their lot and were consequently confronted by employer claims of impermissible conspiracies. A good example of this occurred in the 1949 case, **Automobile Workers, Local 232 v. Wisconsin Employment Relations Board**, 336 U.S. 245 (1949). Additionally, the outcome of **NLRB v. Jones & Laughlin Steel Corp.**, 301 U.S. 1 in 1937 was founded on the premise that many of

With the Wagner Act in 1935, Congress' intent was to encourage group employee action in the hope that individual employees might gain just treatment in the workplace under the terms of collectively bargained agreements with their employers.

the injustices done to employees in the workplace could be corrected by protecting the right of employees to band together, bargain, and strike in support of their demands. Congress sought to deal indirectly with workplace injustice by exempting concerted employee action from the antitrust laws under the 1914 Clayton Act, by prohibiting injunctions against strikes under the 1932 Norris-LaGuardia Act, and ultimately, by enacting the Wagner Act in 1935. Again, Congress' intent was not to protect individual employment rights *per se*, but rather to encourage group employee action in the hope that individual employees might gain just treatment in the workplace under the terms of collectively bargained agreements with their employers. The only employee activities protected were those that enhanced collective group action. An example of this aspect of Congress' dealings with the NLRB can be seen in the 1984 case, **NLRB v. City Disposal Systems, Inc.**

Although the NLRB is often criticized for recognizing these basic principles while concurrently dismissing allegations that interference with an individuals' rights to fair treatment violates the Act, there is little justification for such criticisms. Perhaps many are misled by the labeling of employer and union violations of the NLRA as "unfair labor practices," or the premise that it is uncontrovertibly "unfair" for an employer to discharge an employee because he refuses to drive an unsafe truck or has filed a claim for statutorily established unemployment or worker's compensation benefits. But Congress did not authorize the NLRB to protect individual employee actions unrelated to group conduct any more than it chartered the Board to remedy violations of antitrust, consumer protection, highway safety, or environmental laws. The function Congress gave the Board was to insure that employers and unions do not interfere with the rights of employees to engage in concerted action.

Punitive Remedies

Labor and its supporters have begun to complain loudly over the last few years that the NLRA is not an effective labor management statute because the remedies under that statute are ineffective and not sufficiently tough or punitive to require employers to obey the dictates of that law.

The problem with these contentions (similar to the argument that the NLRB should direct its attention to enforcing individual employee rights) is that it loses sight of what the National Labor Relations Act is all about. It is not the primary purpose and function of the NLRA to bludgeon unions and employers when they commit unfair labor practices, but rather to guide those parties into a room where they may freely bargain an agreement which will deal with the wages, hours, terms, and conditions of the employees. Furthermore, Congress structured the NLRA in a way best designed to make that bargaining work effectively – by providing remedies for Labor Act violations which compensated employees but withheld punitive consequences to employers.

Thus Congress judged that cooperative and effective bargaining is more likely to occur if the bargaining parties are guided, rather than forced, to the bargaining table.

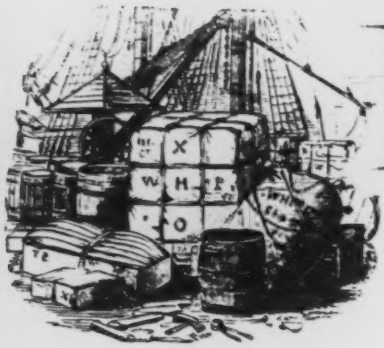
There is an old adage that effectively explains Congress' approach to bargaining under the National Labor Relations Act: "You can lead a horse to water but you can't make him drink." Presumably, the purpose of leading a horse to water is to make him drink. There are two ways in which to do that. One is to cajole and ultimately convince that horse, not only that he should be led to the water, but that he also ought to drink. Although it may take half an hour to lead him there, when he finally gets to the water, he is likely to take a drink. The second way is to hit the horse in the head, knock him out, drag him up to the water by his halter, then let go (which is what the law does with an employer and a union when they get to the bargaining table), stand over him with a club, and when he wakes up, watch to see if he drinks. Under this second scenario, however, there is a strong chance that the horse will jump up and run away rather than drink.

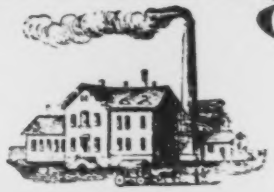
Thus, the consequence of using the punitive but easy way to get the horse to the water does not ultimately produce the desired results. When Congress passed the Labor Act in 1935, it understood that adage. Effective, cooperative, problem-solving bargaining does not stem from employers and unions which have been dragged to the bargaining table.

In summary, the overriding purpose of the Act – cooperative collective bargaining – is better served by a law that does not punish, but merely remedies, unfair labor practices.

Intense international competition and large foreign trade deficits have focused attention on lagging rates of productivity growth in this country.

Productivity and Collective Bargaining





Michael L. Brookshire

Lagging rates of productivity growth in this country have been a major concern during the 1970s and early 1980s. Intense international competition in many of our important industries and large foreign trade deficits have focused even more attention upon records of American productivity improvement and speculations about prospects for the future. In Table 1, productivity indices for the United States and 11 other nations are shown for selected years between 1960 and 1984. Output per labor hour, the most common productivity index, is used as a measurement of comparison. In 1960 the U.S. index was the highest of the 12 reporting nations. However, by 1970 two nations had passed the United States, and by 1980 and 1984 10 of the 11 nations exhibited indices of output per labor hour higher than that of the United States. This article will examine basic concepts and issues in productivity and then discuss attempts to improve productivity in collective bargaining settings.

Basic Concepts

Productivity is the ratio of some measure of output to some measure of input. Two methods of measurement have received the most attention. One, performance productivity, relates physical units of output to physical units (hours) of labor input. Typically, measurements are made by the construction of indices, as in Table 1, so that percentage rates of annual productivity growth can be easily computed. This measurement of productivity does not allow the effects of inflation to hide what is really

happening to productivity, but in many sectors of the economy identifying both physical units of output and even underlying inputs is difficult. Presumably, productivity advances measured under this method can be translated into compensation gains for workers and rewards to other agents of production.

It was to ease the identification of rewards and increase clear incentives for productivity improvement that financial productivity measures were developed. The base ratio for measuring financial productivity in a given period might be the sales value of output divided by labor costs. Assume that labor costs in the base period were 30 percent of the $1 million sales value of output (or $300,000), and that in a future period labor costs have become 25 percent of the $2 million sales value of output (or $500,000). In other words, under a typical arrangement, an industry would have $100,000 available as a reward pool. (Using the base period, 30 percent of the $2 million sales value would be $600,000.) Some formula might be established for sharing this $100,000 "gain" among workers, managers, and perhaps even stockholders.[1] Changes in inflation rates can certainly affect the computation of productivity gains, but financial productivity measures do provide a relatively straightforward means for rewarding productivity improvements, whether in nonunion or union settings.

Productivity bargaining is, or at least can be, one part of the overall process of exchange and compromise in negotiations between management and unions. It has basically involved union agreement on work rules and related changes to improve productivity (however measured) in return for a sharing of the benefits derived. The union/worker share could be realized in higher wages or fringe benefits, bonuses, or, in a financially troubled enterprise, cushions against the possible impacts of layoffs.

General Problems and Issues

A fundamental problem in this country is finding an accurate measurement of productivity improvement. The problem has become more acute as we have moved from a manufacturing to a service economy. It is much easier to measure units of manufacturing output than units of service-sector or public-sector output. On the input side, the question is whether to measure hours of labor actually worked or hours paid. Changes in pay for time not worked, a significant fringe benefit, affect final productivity values differently according to the measure used. As a final example, labor is not the only input. Output may jump and the labor input remain the same, but the output jump might have been due to new or improved capital equipment.[2]

To understand a second issue, one must review the components of productivity improvement. Improved capital equipment and technology have a far greater impact upon output growth than does the quality of labor. One study attributes 80 percent of productivity change to the capital equipment and technology and 20 percent to the quality of labor.[3] At the end of World War II, our country had a vast advantage over other Western countries in capital equipment and technology. Since then, this advantage has considerably diminished and, in fact, has been reversed in several of our basic industries. This scenario is a major backdrop for the changing relationships shown in Table 1.

On the other hand, our manufacturing sector is relatively capital-intensive, and annual productivity growth rates in this sector have traditionally been higher than in the service sector of the economy. Therefore, the simple fact

TABLE 1

ANNUAL INDICES OF PRODUCTIVITY IN TWELVE NATIONS FOR SELECTED YEARS (Output Per Labor Hour)

Country	1960	1970	1980	1984
United States	60.0	79.2	101.7	115.6
Canada	50.3	76.8	101.9	111.9
Japan	22.0	61.4	128.6	167.4
Belgium	32.8	59.9	119.7	–
Denmark	36.4	65.3	114.3	123.6
France	36.3	69.3	112.4	135.2
Germany	39.8	70.9	108.4	122.3
Italy	36.5	72.7	116.9	134.4
Netherlands	31.7	63.0	114.6	–
Norway	54.6	81.7	109.3	121.4
Sweden	42.3	80.7	112.7	134.9
United Kingdom	53.8	77.6	99.9	123.0

Note: 1977=100

Source: U.S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review* (January 1986), p. 117.

The simple fact that the United States has moved from a manufacturing to a service sector economy accounts for much of the decline in our overall rates of annual productivity growth.

that the United States has moved from a manufacturing-to a service-sector economy accounts for much of the decline in our overall rates of annual productivity growth.

All is not gloomy, however. Several of our leading productivity experts predict that annual productivity growth will be 3 percent or even more through 1990. Considering slowing productivity growth rates overseas, this combination should improve our competitive position. Among the reasons for this turnaround are a jump in research and development and rapid advances in computer, telecommunication, and other advanced technologies.[4]

Collective Bargaining

Whether a general improvement in our productivity posture will spread across union-management settings is a matter of some debate, since additional problems of productivity improvement exist in U.S. collective bargaining relationships. Productivity bargaining systems which last over time require mature bargaining relationships with reasonable trust levels; a joint, problem-solving approach to negotiations; methods of reward sharing; an ongoing framework to discuss and refine productivity improvement schemes between negotiations; expertise in productivity measurement and in relevant technologies; and a willingness to innovate in collective bargaining processes. The fundamental problem in the U.S. is the traditions and methods in U.S. industrial relations which are not consistent with the above criteria. Other Western competitors have much stronger traditions of cooperation and norms of union-management relations which place us at a disadvantage.

Union and management representatives in this country are steeped in the custom of an adversarial approach to collective bargaining. While joint approaches to common problems before and during negotiations have occurred, they are not common. Furthermore, the long-established rule during the period of contract administration between negotiations is that "management acts and the union reacts." Union representatives have not really wished to be involved in many of the problems relating to productivity; rather, they prefer to protest management decisions on behalf of those workers who might be adversely affected.

Another way to view the problem is to reference Professor Neil Chamberlain's early definition of bargaining power as "the ability to secure another's agreement on one's own terms."[5] Bargaining power is the other party's cost of disagreement divided by its cost of agreement to *your terms*. Therefore, bargaining power can be increased at any point in negotiations either by raising the other party's relative costs of disagreement or by decreasing their relative costs of agreement to the last offers or demands.

The relevant point is that the tactics of American bargainers have almost always focused upon affecting costs of *disagreement*. For example, unions increase management's cost of disagreement by striking at peak production periods and decrease their own disagreement costs via strike funds. Management increases the union's cost of disagreement via threats to move the plant and decrease their own costs of disagreement by stockpiling and shifting production elsewhere.

Positive developments in productivity bargaining, however, seem to imply at least a partial refocus toward decreasing the cost of *agreement* by the other party. In fact, it is possible for everyone to win if productivity improves; union members are cushioned from negative consequences and share gains. The result is improved American competitiveness. Largely because of adversarial traditions, bargainers have been unilaterally reluctant to make it easier for the other party to agree, lest this thrust be interpreted by the other party as a sign of weakness.

Some American Experiences

In actuality, it is difficult to find examples of U.S. bargaining relationships where true productivity bargaining has occurred over a significant period of time. An early private-sector example was the bargaining between the railroads and the United Transportation Union over the elimination of firemen. The issue, first discussed in 1943, was the focus of several presidential boards, and became the subject of political and public pressure.[6] Nevertheless, crew size issues were not resolved until 1972, almost 30 years later. Similar problems existed in the 1950s as the Teamsters and the railroads bargained over the impact of new "piggyback" containers placed on railroad flatbeds.[7]

In more recent times, a highly publicized example of bargaining over productivity improvement possibilities involved the near-bankrupt Chrysler Corporation and the United Automobile Workers. Chrysler did receive productivity-improvement concessions as well as monetary concessions in this high-pressure situation; the union received

Probably the leading American example of long-term union-management discussions related to productivity is the relationship of the TVA and unions representing more than 25,000 trades and labor, white collar, and professional employees.

several worker security guarantees and took back many of its other concessions while Chrysler was being restored to health. Severe pressures from foreign competition in the tire industry also produced bargaining over productivity issues between tiremakers and the United Rubber Workers. From 1975 through the mid-1980s, productivity in the industry grew impressively, and this growth resulted, at least partially, because of work rule changes negotiated with the union.[8]

A publicized example in the public sector involved New York City and its severe financial crisis of 1970. Mayor John Lindsay announced that any monetary gains negotiated with city unions would be tied to verifiable improvements in productivity. Lindsay's administration later pointed to such productivity improvements as a 350 percent decrease in down time in the fleet of sanitation trucks. However, at least one critic analyzed the Lindsay approach as a simple "buy-out" tactic to achieve productivity improvements and argued that monetary gains by city unions may have exceeded productivity savings.[9]

Probably the leading American example of long-term union-management discussions related to productivity is the relationship of the Tennessee Valley Authority (TVA) and unions representing more than 25,000 trades and labor, white collar, and professional employees. Since the early 1940s, joint union-management groups have met on a regular basis to discuss, among other topics, productivity-improvement ideas. These discussions were separate from formal negotiations, so a strict definition of productivity bargaining was not met. On the other hand, topics discussed sometimes spilled over into formal bargaining, and a favorable climate was certainly created for joint efforts to improve productivity. The cooperative program between TVA and its unions of salaried employees ended in 1981 after the extremely difficult bargaining sessions of that year.

A summary of the U.S. experience to date is that there are few, if any, examples of true productivity bargaining which meet the criteria suggested earlier in this article. Bargaining over productivity improvements has tended to occur when the parties have been under severe pressures of bankruptcy, massive job losses, and/or technological obsolescence. Moreover, the parties have seldom moved from adversarial traditions toward joint and continuous approaches to productivity improvement even in such instances.

The Future

Quality circles and related programs are much in vogue and often deal with productivity improvement topics. The existence of these types of programs will probably create more attention to joint union-management approaches to productivity improvement and the sharing of rewards through collective bargaining. Improved mediation techniques may also aid in allowing the parties to aim at lowering costs of agreements.

It seems more likely that the inertia of existing bargaining traditions and approaches will be broken only through the application of pressure. This may be the intensifying pressure of international competition, which threatens the jobs of both American workers and managers, and affects the health of the overall economy. The extent to which productivity improvements can be obtained in collective bargaining settings will certainly influence the size of the American union movement and the nature and stability of industrial relations in this country.

1. Brian E. Moore, *The Scanlon Way to Improved Productivity: A Practical Guide* (New York: John Wiley and Sons, 1977).
2. For more details see Leon Greenberg, *A Practical Guide to Productivity Measurement* (Washington, D.C.: Bureau of National Affairs, 1973).
3. Edward F. Denison, *Accounting for United States Economic Growth, 1929-1969* (Washington, D.C.: Brookings Institution, 1974).
4. "The Revival of Productivity," *Business Week* (February 13, 1984), pp. 92-100.
5. Neil W. Chamberlain and James W. Kuhn, *Collective Bargaining* (New York: McGraw-Hill, 1965), p. 170.
6. Marvin J. Levine, "The Railroad Crew Size Issue Revisited," *Labor Law Journal* (June 1969), pp. 373-386.
7. Philip Ross, "The Teamsters' Response to Technological Change: The Example of Piggybacking," *Labor Law Journal* (May 1970), pp. 283-297.
8. *Business Week*, *op. cit.*, pp. 94-95.
9. R. D. Horton, "Productivity Bargaining in the Public Sector: Caveat emptor," *MBO and Productivity Bargaining in the Public Sector* (Chicago: International Personnel Management Association, 1974), pp. 37-47.

To achieve labor relations harmony in this country, labor and management need to step out of the past and view current problems in a larger perspective.

ARE STRIKES OBSOLETE?

Bruce Thrasher

At one time or another, strikes in the United States are everyone's business, because, directly or indirectly, they generally have some effect on everyone's life. In order to make informed judgments, we need to look closely at the strike issue with all of its harsh implications, so that possible alternative courses of action may be properly evaluated and implemented. This article will be concerned with putting the strike problem into proper perspective; it will not provide a ready-made solution to strikes, but offers methods for the analysis of the problem, leaving the application to labor and management.

Primarily this article deals with the causes and effects of strikes, exploring them from the standpoint of the (1) symptoms and causes, (2) effect of economic conditions, (3) public perception, (4) obsolescence, and (5) prevention.

Symptoms and Causes of Strikes

Union members look to their unions to provide them with fair wages, decent working conditions, and protection from the arbitrary power of management. In pursuit of these objectives, unions have provided members with a certain amount of control over their wages and working conditions by influencing many decisions formerly held to be management's prerogative. As

a result, the scope of collective bargaining has continued to increase. There is growing evidence that unions will continue to press for a greater voice in matters that affect their members in the workplace.

Thus union insistence, countered by management's resistance, in many cases leads to a full-scale confrontation between the parties. The threat of such a confrontation stresses an important aspect of our system of collective bargaining – that the system is a contest in which many factors play a role: economic power, the persuasive skill of the parties, the ability to pound the table, the backing of members or other employers, and many other economic and noneconomic factors. To resolve such a difficult and crucial contest, both parties must desire a settlement and thereby reduce the probability of a work stoppage. Because of the many institutional considerations, both external and internal, that impact upon the system, it is a complex and difficult procedure that tends to break down occasionally. As a result, strikes *do* occur, and they generally result from a miscalculation or a breakdown in the collective bargaining system.

Once the system breaks down, the strike becomes the most effective and costly weapon in the union's arsenal. A well-planned, successful strike can paralyze an employer from both an economic and customer relations standpoint. Any strike, therefore, raises two important questions: (1) whether the union members or the employer can best stand the losses if a strike occurs, and (2) whether the union can effectively strike the employer. It may evolve into who can hold out the longest on the first issue; on the second issue, a strike can be made effective or "broken."

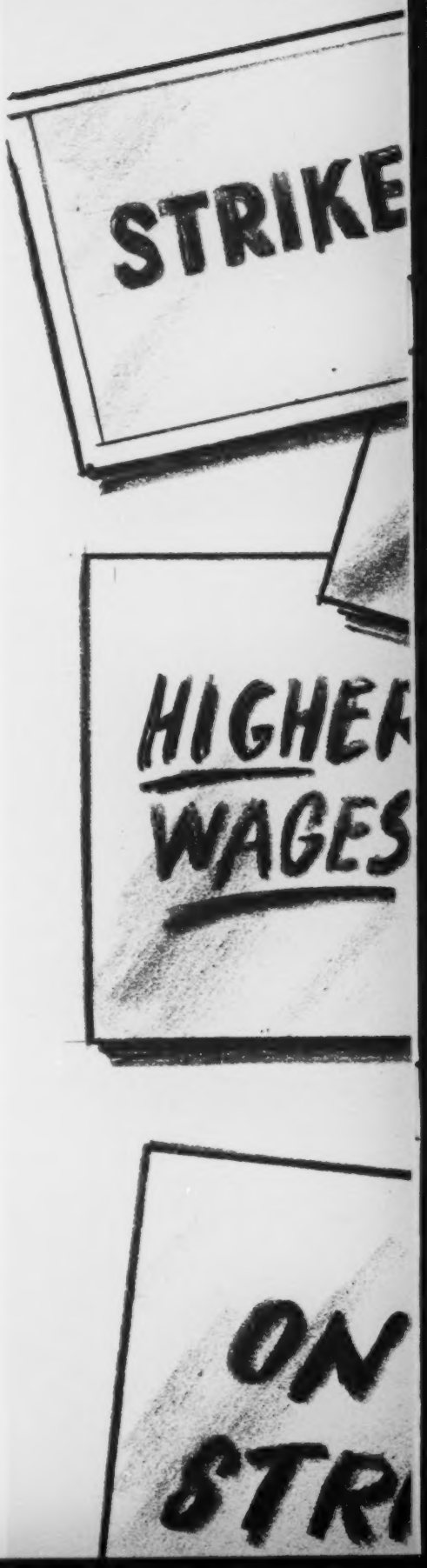
What causes strikes? Frequently, wage and benefits, hours of work, and conditions of employment are the key issues in a contract dispute that might result in strike action. However, sometimes there are more inconspicuous reasons why a strike may occur. For example, there is a tactic known as the "get-even" factor in contract negotiations. It involves an employer's putting on the bargaining table an excellent contract package which eventually is overwhelmingly rejected by the union. The contract might have been rejected because the members felt that they had been subjected to management abuses during the previous agreement; therefore, they were determined to "get even" in the current negotiations. Such strikes are usually the result of the employer's misjudgement of the contract issues. In many instances, internal union politics can play an important role in contract negotiations. The impact of such politics on a strike vote is often difficult to predict. The failure of the union leadership to control the membership, as well as political competition among union leaders, may also contribute to the possibility of a strike.

Although labor generally appears to be the aggressor in contract disputes, it is not always the case. Many of the strike pressures generated at the bargaining table arise from the management side. Whether strikes occur because of either labor or management, they can result in substantial economic loss. Some argue that the loss, however, must be weighed against the gains that result from free collective bargaining. There are a number of occasions, however, when the effects of a strike go far beyond the immediate realm of a labor-management conflict, and the costs exceed the gains. It is these cases that raise the difficult issues that labor and management must address.

Effect of Economic Conditions on Strikes

Historically our nation's economy has been hampered by short-term instability, gaining momentum for a few years only to fall back temporarily before achieving new peaks of production. A variety of names are given to these fluctuations in employment, prices, production, and wages: "business cycles," "inflation and deflation," "prosperity and depression," or simply "boom and bust." All signify disturbances that interrupt the long-term improvement in the nation's economy.

Bruce Thrasher



Why worry about these short-term swings if in the long run each business cycle leaves the economy at a higher level than its predecessor? The answer, of course, is that a depression means idle plants, unemployment, and reduced purchasing power. Such fluctuations in our economy have a direct bearing on collective bargaining. In periods of economic prosperity, demands for wage and benefit increases have top priority on the union's negotiating agenda. If the economy is prosperous, unions believe that they have a better chance for success at the bargaining table. Under such conditions they are willing to initiate strike action to achieve their bargaining objectives. During an economic recession, cost-cutting demands come from the management side of the table. When sales and profits decline, employers seek to reduce costs by cutting wages and other labor costs. Under these adverse economic conditions, unions are reluctant to undertake strike action.

The current temporary decline in strike activity should not be taken as a sign that the decline will continue over the long term. The present lull is simply a realistic response to today's economic climate. Over the past few years many companies have suffered serious financial losses that have resulted in numerous plant closings. Labor's ranks have been savaged by a massive wave of plant shutdowns and cutbacks. In addition, labor has been covered up with management requests for "givebacks," "takebacks," "reductions," "deferrals," and other economic survival concessions.

Tough economic times have substantially reduced union membership and dues income. A number of unions have been forced to cut their staffs, thereby reducing their organizing efforts and strike activity. As the economy continues to improve, labor will be on the move. They have waited their turn and are ready for action. When things get better, union demands will get tougher. This change could possibly set the stage for a new wave of strike activity in the nation.

Public Perception of Strikes

Rarely does any issue raise the emotional level of individuals more than the subject of strikes. Our nation appears to be in a period of reckoning and rethinking concerning strikes. What seems to be emerging is a widening of the gap between those who support the right to strike and those who oppose it. The opponents, who believe that strikes should be strictly controlled, emphasize the trauma caused by work stoppages: plant closings, loss of jobs, and picket line violence. Others argue that strikes must be tolerated as a necessary cost in our democratic system. A merging of the divergent viewpoints into a rational approach to the problem of strikes seems unlikely to occur in the near future.

The average citizen gets his information about a strike from newspaper headlines. Because strikes are dramatic, people read about them in newspapers; they rarely read about peaceful contract settlements between labor and management. Most contract negotiations are settled without a strike. Statistics show that each year, on the average, less than one-fourth of 1 percent of total available working time in the nation is lost through strikes. Although economic losses from a strike are potentially substantial, most observers agree that in a democratic society, the price of protecting the right to strike is indeed a small one to pay.

Occasionally a strike means that the public may be denied certain goods and services. In such situations, the public has indicated a willingness to tolerate some occasional inconvenience to permit labor and management to settle their dispute at the bargaining table, but there are limits to public patience. Generally, the public has indicated that it will not tolerate a shutdown of vital goods and services or condone strikes when public health or safety is endangered. The immediate reaction is to seek prompt restoration of those goods and services. At the same time, some argue that the public should also have the goal of preserving free collective bargaining in the United States.

The threat of a strike puts pressure on both labor and management to reach an agreement at the bargaining table. That is why, in a free society, there is no apparent constructive alternative to the right to strike.

Obsolescence of Strikes

Because a strike causes disruption and economic loss, it is frequently criticized. But the right to strike is firmly established by law and public policy. Section 7 of the National Labor Relations Act guarantees employees the right "to engage in other concerted activities for the purpose of collective bargaining or other mutual aid or protection." Many hold the view that the right to strike is a legitimate and fundamental part of a free economic system and that it constitutes the final test of bargaining strength between labor and management. Indeed, as it is often pointed out, the threat of a strike puts pressure on both labor and management to reach an agreement at the bargaining table. That is why, in a free society, there is no apparent constructive alternative to the right to strike.

Presumably, for some, an ideal solution would be an industrial order in the United States where strikes would be prohibited. However, the Communist countries, which have outlawed strikes, are now forced to admit that strikes and labor troubles continue to persist. As long as people and institutions have differentiated roles, each is going to contend for greater rewards. Competition between individuals and institutions is normal. But there is a clear need to moderate adversarial relationships, to avoid eruptions of violence and to control these competitive forces under generally accepted rules, rather than eliminate the right to strike.

It is generally accepted that the right to strike has become a permanent part of the American system of collective bargaining, and while the level of strike activity will vary over the years, it appears that collective bargaining disputes will continue to exist over the sharing of the economic pie. As long as labor and management continue to argue over who gets the bigger slice of that pie, strikes will not become obsolete. Strikes will become obsolete only when the causes of strikes become obsolete.

Prevention of Strikes

As the economy continues to rebound, a concentrated effort to moderate future strike activity would clearly be in the best interest of labor, management, and the public. It cannot be denied that some strikes are unavoidable, but labor and management can act to diminish the frequency of contract disputes that grow into strikes. There are no easy solutions to today's economic and collective bargaining problems. But labor and management can effectively utilize aggressive joint cooperation in the economic and political affairs of society. Only when labor and management recognize and understand that joint cooperation is a full partnership of equals can a positive, mature relationship develop that will benefit both parties.

Joint cooperation alone, however, will not resolve a fundamental problem that labor and management face today. If they are jointly to meet the challenges of the future, labor and management must renounce their former negative philosophies and adopt new methods and procedures that are more conducive to effectuate the joint cooperative approach.

Today, labor and management are saddled with outdated policies that are characterized by confrontation, mutual distrust, and suspicion. Imbedded in these archaic policies are individual belligerent attitudes and deep, emotional human feelings. In addition, institutional structures and operating procedures of companies and unions sometimes unnecessarily hamper progressive movement. The system of collective bargaining that has served the parties and the nation well during the past 50 years is now outdated and should be revamped to make it more responsive to the needs of the parties as well as provide workable solutions to existing problems.

Jointly, labor and management can make a valuable contribution to labor relations harmony in this country. The key is to step out of the past and view current problems in a larger perspective. Seeing disputes without the distorting influences of personal emotions and motivations can make for a judicious and realistic approach to joint problem solving.

An Endowment Fund in honor of J. Fred Holly, directed by his distinguished former students, was established by the Department of Economics in the Spring of 1985. Upon his recent death, the fund became a memorial to Dr. Holly.

Income from the endowment will be used for, but not restricted to, support of the following programs:

J. Fred Holly Scholarships and J. Fred Holly Graduate Fellowships;

J. Fred Holly Outstanding Teaching Awards;

J. Fred Holly Faculty Development Awards; and

J. Fred Holly Visiting Scholars Program.

Gifts to the fund or questions about gifts should be directed to:

College of Business Development Office
The University of Tennessee, Knoxville
721 Stokely Management Center
Knoxville, Tennessee 37996-0570
(615) 974-6083